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REVIEW ARTICLE OPEN ACCESS

A Review on Different Routes of Transmission of Covid-19

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ABSTRACT

Corona virus disease first appeared in China in December 2019 and has spread throughout the world more than 203 countries. This disease is caused by corona virus (COVID-19) which spread from person to person and causes death of many people. Since it is a novel virus we should know about the routes of transmission of this virus in detail. The main route of transmission of the infectious agent is air borne transmission. Also through contact from person to person, some certain contaminated areas and through the cough, sneeze of the infectious host. The viral particles spread in air are smaller or larger droplets and aerosols. It reaches other individuals or sticks on any solid material. So the mode of transmission of virus is needs to be emphasized. Certain studies are conducted to prove the persistence and viability of the virus in air. Nebraska University Hospital collected the samples of air from the hospital and its surroundings and conducted the test. They concluded that the virus is transmitted by means of air (airborne transmission). Here we discuss about the different routes of COVID-19 transmission.

Key words: Corona virus, COVID 19, SARS- CoV- 2, Airborne

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INTRODUCTION

World is fearfully witnessing the spread of corona virus disease by SARS-CoV-2 from country to country, person to person. The first corona case was reported in China (Wuhan) in December 2019. Later it slowly crossed the boundaries and since it becomes a pandemic disease. Spreading from person to person through droplets in air, aerosols etc. or by direct contact with affected person cause severe respiratory illness with cough, fever, cold and fatigue etc. As it reaches May 2020 there are 3.5 millions of confirmed cases and more than 2 lakhs of mortality rate reported in the world wide, and increasing day by day in the world.

Severe Acute Respiratory Syndrome (SARS) CoV-2 is a beta corona virus having an enveloped single-stranded RNA belonging to the sarbeco virus subgenus of family coronaviridae [1]. RNA genome is 29891 nucleotides in size encoding 9860 amino acids. The International committee on Taxonomy of viruses proposed the SARS CoV- 19 on the basis of this virus caused the outbreak of severe Acute Respiratory syndrome. The main pathogenesis of this virus is not widely known. In human SARS-CoV-2 will affect or infect the cells of the airway and mainly the respiratory system that lives the alveoli. In cell it get duplicates its genetic material and produce certain proteins needed, forms new viruses and appears on the cell surface and hence it is multiplying and get affected to cause these severe illness [2].

The infectious agents of the disease can be spread through different pathways. The mode of transmission of virus is classified into different types. It includes interpersonal transmission, airborne transmission and other means of transmission such as vector spread, other contaminated surfaces. Through the expelled air of an infected person the virus can reach the atmosphere as droplets or aerosol particles. The respiratory particles may often be distinguished as droplets having small particle size. When the virus reaches the atmosphere through cough or sneeze the virus particles are encapsulated in globs of saliva, mucus and water [14, 16]. Prince Wale Hospital (Hong Kong) as well as health care centers Toronto (Canada) conducted several studies on this. Also inside Wuhan Hospitals, Nebraska University Hospital SARS-COV-2 RNA was detected in air samples collected inside the hospitals [12, 13]. All these studies reaching out in the conclusion that airborne transmission is the main route of transmission of this corona virus.

METHODOLOGY

Several reliable sources and reputable journals and articles which explain much information related to the corona virus disease and routes of transmission of virus were analyzed.

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RESEARCH ARTICLE

Comparative Evaluation of Anti-Inflammatory Activity of Vatsanabha Purified by Two Different Methods

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ABSTRACT

Nowadays ancient system of medicine is gaining importance due to increasing side effects of modern medicines. Medicinal scriptures of Ayurveda are major source of knowledge about the drugs for various emerging diseases. Inflammation is a chronic disease condition. Many inflammatory diseases are cured by ayurvedic medicines. These medicines must gain acceptance in present world. Vatsanabha is a drug which is found in Himalayan region in India. Vatsanabha when subjected to Shodhana process act as a potent drug to treat various diseases which is practiced by Ayurvedic physicians since ancient period. Shodhana processed Vatsanabha is the chief constituent in formulation swasanantharam tablets which is used for respiratory disease like asthma. Ayurvedic literature reveals Vatsanabha as 'mahavisha' (poisonous drug) which cause toxicity to body when consumed in pure form. The crude drug is processed or purified using cow's urine or cow's milk. On treatment with cow's urine or cow's milk, aconitine is converted into aconine which is nontoxic. The drug shows anti-inflammatory activity as well as anti-asthmatic activity. It is also known for its antipyretic activity. The present investigation is to compare the anti-inflammatory activity of Vatsanabha purified by two different methods such as treatment with Cow's milk and Cow's urine. The anti-inflammatory studies include Human RBC Stabilization method and albumin denaturation method. The absorbance is determined at 560nm and 660 nm respectively. By using the absorbance value, percentage inhibition values are calculated and compared.

Keywords: Vatsanabha, Anti-inflammatory activity, Aconite, Albumin denaturation, Shodhana.

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REVIEW ARTICLE

Review on Chemotherapeutic Nanoformulations

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ABSTRACT

Cancer is one of the major causes of death in the human population. Cancer is the unconstrained growth of abnormal cells in a body. Various strategies have been implemented to treat this dead-causing disease. Radiation therapy, chemotherapy, immunotherapy, hormone therapy, and surgery are the various cancer treatment strategies. This review deals with the various chemotherapeutic drugs and their nano formulations used for cancer treatment. There are several classes of drugs used as chemotherapeutic agents. These agents had several drawbacks which can be overcome by their nanoformulation. Drug Docetaxel is approved and used for breast cancer. But the drug is associated with systemic toxicities and to overcome this drawback the drug is encapsulated in Poly lactic-co-glycolic acid nanoparticles. Docetaxel-loaded solid seif-nano emulsifying drug delivery system also shows enhanced antitumor efficacy. Drug Paclitaxel is a naturally occurring taxane and is a widely used anticancer agent. The nanoformulation of the drug shows enhanced stability and prolonged blood circulation time. Nanoformulation of the drug doxorubicin had reduced toxicity and increased therapeutic efficacy. Drug Teriflunomide is a potent anticancer agent with a high risk of hepatotoxicity, and the microemulsion of the drug is capable of overcoming this problem. The drug Rapamycin-loaded polymeric Poly lactic-co-glycolic acid nanoparticles shows high efficacy in breast cancer therapy. Nanoformulation of drugs Irinotican and Methotrexate also show enhanced anticancer activity. Many molecules and formulations are developing to conquer this dead-causing disease and with the help of new technologies, we can overcome this disease and save human population.

Keywords; micelle, fullerenes, Glioblastoma multiforme, microemulsion.

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REVIEW ARTICLE

Resealed Erythrocytes: A Review

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ABSTRACT

The term drug delivery refers to the administration of a pharmaceutical compound to humans or animals to achieve a therapeutic effect. A drug delivery system enables the pharmaceutical compound to reach the site of action selectively. Modern science has invented several types of drug delivery systems like Liposome, Niosome, Nanoparticles, etc. Resealed erythrocytes belong to the category of novel drug delivery systems. They have the specialty over other discovered delivery systems because they can overcome some of the disadvantages possessed by others. Simply resealed erythrocytes are ideal drug delivery systems. Preparation of resealed erythrocytes requires extreme care and simply includes the collection of erythrocytes, entrapping the drug, and then resealing it. For drug entrapment several methods like hypotonic hemolysis, isotonic osmotic lysis, chemical perturbation, and electro insertion are used. Resealed erythrocytes have a wide range of applications in drug delivery. Many companies are trying to get the marketing approval for their products which are meant for treating severe diseases like cancer and most of them are under clinical studies. Even though the development is risky resealed erythrocytes is a promising drug carrier system.

Keywords: Resealed erythrocytes, Drug delivery system, Carrier, Novel drug delivery, Drug targeting, Drug entrapment.

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REVIEW ARTICLE

Review of Marketed Anticancer Implants

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ABSTRACT

Cancer is the unconstrained growth of abnormal cells in a body. There are over 200 types of cancer. Various strategies have been implemented to treat this deadly dead-causing disease. Treatment with anticancer agents in implantable form shows better therapeutic response and increased life span in cancer patients. Implants are the medical devices that had constructed to restore a missing biological structure, aid a damaged biological structure, or intensify an existing biological structure. Most chemotherapeutic agents have low aqueous solubility and are cytotoxic. Targeted drug delivery is another concern in cancer treatment. Implantable dosage forms provide targeted and controlled drug delivery which helps to reduce drug toxicity. And also protect normal cells. Gliadel is an anticancer implant loaded with carmustine drug and provide better therapeutic activity. It acts by slowing the growth of cancer cells in body. Eligard is leuprolide loaded implant approved by FDA to treat prostate cancer, breast cancer, ovarian and endometrial cancer. Viadur is an implant loaded with leuprolide acetate which provides high efficacy in cancer treatment. Oncogel is an implant loaded with paclitaxel is a promising approach in cancer therapy that can reduce the systemic toxicity of the drug. The implant is capable of targeting drugs to tumor cells. This review deals with the information about marketed available anticancer implants.

Keywords: Cancer, Implant, Glioblastoma multiforme

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Research Article

Development of Esomeprazole Mucoadhesive Timerx Tablets

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ABSTRACT
The recent advances in the emergence of gastro retentive controlled drug delivery systems envisages the development of mucoadhesive controlled release tablets for the treatment of gastric ulcers. The present work deals with the formulation and evaluation of mucoadhesive controlled release tablets containing Esomeprazole magnesium trihydrate prepared by TIMERx technology. The blend of TIMERx polymers, Xanthan gum and Locust bean gum enhanced the duration of drug release in more controlled way. A total of six formulations namely F1,F2,F3,F4,F5 and F6 tablets were prepared by TIMERx technology containing bioadhesive polymers like Chitosan, Carbopol 974P, Polyvinyl pyrrolidone, Sodium Carboxy methyl cellulose, Sodium Alginate and Polaxomer respectively. The prepared tablets were subjected to pre and post compression evaluation studies. The flow properties were shown to be excellent for all powder blends assessed from their Carr's Index values. F4 showed maximum hardness whereas F4 and F5 showed maximum mucoadhesion time with minimum swelling index. Considering mucoadhesion time, swelling index and mucoadhesive strength, F5 was selected and subjected to in-vitro dissolution studies and kinetic data analysis, which are then compared with the marketed controlled release tablets of Esomeprazole.F5 showed the maximum cumulative percentage release of 64.20% following zero order release kinetics, whereas marketed formulation showed a release of 36.62% after 8 hours.F5 had proved to be the best candidate considering maximum percentage drug release in controlled pattern, Mucoadhesion time and strength which are the pre-requisite properties of Esomeprazole, potentially decreasing gastric acid secretion in peptic ulcer patients.

Keywords: Sodium alginate, TIMERx, Esomeprazole, Locust bean gum, Xanthan gum

INTRODUCTION
The success of controlled drug delivery system is dependent on various physiological activities like short gastric residence time and unpredictable gastric emptying time. Increase in gastric residence time increases the drug solubility in gastric pH. In order to deliver the drugs having narrow therapeutic index and to increase its bioavailability, gastro retentive drug delivery systems were developed which had gained attention in the past decades.

Certain drugs having narrow absorption window releases the drug in the region preceding and in close vicinity to the absorption window. The drug released after crossing the absorption window gets eliminated from the body without producing any intrinsic activity. This minimizes the time available for drug absorption and its bioavailability. Therefore the aim of oral controlled drug delivery system has faced difficulties related with physiological adversities like short gastric residue time(GRT) and gastric emptying time(GET).Prolonged GRT improves the bioavailability, increase the duration of drug release, reduce the drug waste and improve drug solubility that is less soluble in a high pH environment. This has triggered the attention towards the development of various gastro retentive drug delivery technologies to deliver narrow absorption window drug with improved bioavailability. [1]

Gastroretentive dosage forms are designed to be retained in the gastric region for prolonged period and release the incorporated drug candidates and thereby enable sustained and prolonged input of the drug to the upper part of the GIT thus ensuring its optimal bioavailability. Thus, they not only prolong the dosing intervals, but also increase patient compliance beyond the level of existing controlled release dosage forms. This application is especially effective in the delivery of sparingly soluble and insoluble drugs.

Gastroretentive dosage forms made it possible to treat gastric and duodenal ulcers, esophagitis thereby reducing the risk of gastric carcinoma. Many technological attempts have been made to devise various controlled release gastroretentive drug delivery systems namely, high density (sinking) systems that is retained at the bottom of the stomach, low density (floating) systems that causes buoyancy in gastric fluid, mucoadhesive

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RESEARCH ARTICLE

Comparative Study on Phytochemicals, Antioxidants and Antimicrobials Components in Leaf Extracts of *Curcuma caesia* Roxb. with Reference to Location

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ABSTRACT

Medicinal plants are reported to possess various activities. The present study was designed to compare the antimicrobial and antioxidant potency of *Curcuma caesia* Roxb, Himalayan variety, and native Kerala variety. Methanol extracts of both varieties of *Curcuma caesia* Roxb were investigated for the comparison of antimicrobial activity by the disk diffusion agar plate method. The activity index was calculated which was more than 0.5. Himalayan variety exhibited more antimicrobial activity towards gram-positive and the Indian variety exhibited more activity in the gram-negative microorganism. We also investigated the antioxidant activity of *Curcuma caesia* Roxb, Himalayan variety, and native Kerala variety by FRAP method. The maximum percentage of inhibition by the Himalayan variety was found to be 98.76±0.2 % and that of Indian variety was found to be 81.81±0.32%. IC50 values were found to be 28.1µg/ml, 29.9µg/ml, and 39.9µg/ml for ascorbic acid, Himalayan variety, and Indian variety respectively. The study has provided a basis to explore the chemical constituents in *Curcuma caesia* Roxb.

Keywords: *Curcuma caesia* Roxb, FRAP method, disk diffusion agar plate method, antimicrobial and antioxidant potency

Original Article

Solubility Enhancement of Embelin by Complexation with Beta Cyclodextrin

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ABSTRACT

Introduction: Embelin, a phytoconstituent obtained from *Embelia ribes* of the Myrsinaceae family, has anti-cancer, anti-inflammatory, anti-bacterial, anti-fertility, analgesic, antidiabetic, anti-depressant and wound healing activities. It is hydrophobic in nature leading to low bioavailability. **Aim:** The present study aims to improve the water solubility and rate of dissolution of Embelin by complexation with β-cyclodextrin. **Methods:** Inclusion complexes were prepared by physical mixture, kneading and co-precipitation methods. Characterization of complexes was carried out by Fourier-Transform Infrared (FT-IR) spectroscopy and *in vitro* dissolution study. Differential scanning calorimetry (DSC) and Scanning electron microscopy (SEM) was used to analyze the prepared complexes prepared by the co-precipitation method. Antimicrobial studies of complexes against *Staphylococcus aureus* and *Escherichia coli* were carried out by colony counting method. **Results:** Phase solubility study showed Embelin forms complex with β-cyclodextrin in the ratio 1:2. FT-IR studies of complexes confirmed Embelin forms complex with β-cyclodextrin. DSC and SEM also confirmed the formation of a complex of Embelin with β-cyclodextrin. *In vitro* dissolution studies showed that the time to release 50 % (t50) of Embelin was in the order 15 min, 30 min, 60 min for complexes prepared by co-precipitation, kneading method and physical mixture respectively. Complexes prepared by the coprecipitation method showed 2 log reductions in the number of *S. aureus* and 1 log reduction in the number of *E. coli* in comparison with Embelin. **Conclusion:** Complexes of Embelin prepared by co-precipitation method resulted in largest percent drug content, enhanced aqueous solubility and antibacterial activity.

Key words: Embelin, β-cyclodextrin, Inclusion complexes, Solubility, Co-precipitation method.

INTRODUCTION

Potential health benefits and less toxicity of natural products made them the first choice for the search for new drugs.[1] Embelin (Figure 1) is a phytoconstituents obtained from the plant *Embelia ribes* from the Myrsinaceae family.[2,3] It has anticancer,[4] anti-inflammatory,[5] anti-bacterial,[6] anti-fertility,[7] analgesic,[8] antidiabetic,[9] anti-depressant,[10] and wound healing activities.[11] Molecular weight of Embelin is 294.391 g/ mol and melting point is 142.5°C. It is lipophilic in nature with a log P of 4.34.[12] Embelin has low solubility[13] in water (0.2-0.3 mg/ml)[14] and less bioavailability (30±11%).[2] It is a 2,5-dihydroxy-3-undecyl-1, 4-benzoquinone.[7]

Cyclodextrins (CDs) are obtained from the enzymatic degradation of starch.[15] They can form complexes with drug molecules which is favored by cyclodextrin's unique ring structure made by binding of glucose units. Such complexes can improve the physicochemical properties of drugs without changes in their molecular level[16] rendering the name 'enabling pharmaceutical ingredients' for cyclodextrins.[17] The α, ß and γ-CD cyclodextrins are composed of six, seven and eight D-(+) -glucopyranose units[18] respectively. Present study uses β-cyclodextrin which is cheap, biocompatible, possesses adequate cavity

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REVIEW ARTICLE

Baclofen :A Review

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ABSTRACT

Baclofen is a centrally acting skeletal muscle relaxant used in the treatment of muscle spasticity, alcohol use disorder, spinal cord injury, depression disorder, epileptic disorder, neuropathic pain etc. Baclofen is a ϒ-amino butyric acid derivative having same analgesic property as that of NSAIDs. It belongs to BCS class III and pharmacological class skeletal muscle relaxants. Baclofen is the only $GABA_B$ receptor agent approved for clinical use. Currently baclofen is available as oral tablets and intrathecal injection in the market.

Keywords: Baclofen, chemistry,pharmacokinetics, uses, pharmacodynamics.

INTRODUCTION

Baclofen belongs to the class of skeletal muscle relaxants [1].Chemically , baclofen is ϒ-amino-β-[p chlorophenyl]-butyric acid derived from the inhibitory neurotransmitter ϒ-aminobutyric acid (GABA). Patients with multiple sclerosis or with spinal or cerebral disorders, muscle spasticity can be treated with baclofen [2]. Baclofen is a centrally acting skeletal muscle relaxant [2]. It has many other medical uses besides treatment for spasticity. Baclofen is effective in treating alcohol dependence, lower back pain, gastroesophageal reflux disorder (GERD), epilepsy, depression disorder [5,7,9,18] etc.

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RESEARCH ARTICLE

Baclofen in Treatment of Neuropathic Pain

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ABSTRACT

Baclofen is a centrally acting skeletal muscle relaxant pharmacologically and BCS class III pharmaceutically. It is FDA approved drug used in the treatment of muscle spasticity, localized neuropathic pain, management for the relief of flexor spasms, clonus and concomitant pain, common sequelae of spinal cord lesions and multiple sclerosis. Baclofen also has several off label uses. Baclofen (beta-[4-chlorophenyl]-GABA) is an agonist of gamma-aminobutyric acid at beta subunit and has action on mono and polysynaptic neurons at the spinal cord level and brain. Currently baclofen is available for oral, transdermal and intrathecal administration through pump infusion.

Keywords: Baclofen, Neuropathic pain, Mechanism of action

INTRODUCTION

Neuropathic pain is a common problem in clinical practice [2]. Neuropathic pain may be resistant to usual doses of analgesic medications. Neuropathic pain may be considered to be pathophysiologic because it arises from peripheral or central nervous system injury and serves no obvious protective function [3]. Neuropathic pain, a challenging pain category which is considered to be particularly difficult to treat. Diabetes, immune deficiencies, malignant diseases, traumatic and ischemic disorders seems to rise neuropathic pain [4]. Neuropathic pain generally presents with a combination of painful and non painful symptoms, including : spontaneous ongoing (notably burning) pain, paroxysmal pain, allodynia, hyperalgesia, after sensation, summation of pain, paresthesias, dysesthesias, and sensory deficit in the painful area [5].

Cureus

Open Access Review Article

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Pre and Post-Operative Alterations of the Gastrointestinal Microbiome Following Bariatric Surgery

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Abstract

Obesity in the United States is increasing at a startling rate, with more individuals turning towards bariatric surgery as treatment. A noteworthy aspect of obesity pathology is its interplay with the gastrointestinal microbiome. The gastrointestinal microbiome comprising trillions of microorganisms affects the dynamics of digestion, energy expenditure, and neurologic mechanisms that affect dietary preference. This literature review used PubMed to search for articles about obesity, gastrointestinal microbiome, and bariatric surgery. The researchers used Medical Subject Heading keywords, and then the relevant literature was selected and filtered using inclusion and exclusion criteria. This study aims to review the temporal relationship of gastrointestinal microbiome changes after bariatric surgery in association with the success and failure of treatment along with the factors that may have altered the gastrointestinal microbiome other than the anatomical aspect of bariatric surgery.

Categories: Internal Medicine, Gastroenterology, General Surgery
Keywords: bariatric surgery complications, gastrointestinal microbiome, upper gastrointestinal surgery, gut microbiome, gut microbiome (metagenomics) and metabolomics aspects of diabetes, endoscopic management of obesity, laparoscopic roux-en-y gastric bypass, adjustable gastric band complications, gastric bypass surgery, bariatric surgery/therapeutic use

Introduction And Background

Obesity in the United States has increased from 30.5% to 42.4% in 20 years and is growing upward. Among the different categories of obesity, an alarming rate is seen in severe obesity, which has increased from 4.7% to 9.2% [1]. Obesity is known as a condition brought about by an overabundance of body fat. However, new studies have described obesity as a dysfunction of the constant shifting of homeostatic control of energy balance towards a positive energy balance [2]. Thus, proving that obesity has a multifactorial and complex etiology.

The gut microbiota comprises more than 10-100 trillion microorganisms, which contains the most significant number of microorganisms seen in the human body. Recent studies have identified that there are alterations at the phylum level in obese individuals [3]. Proposed mechanisms for intestinal microbiota-induced obesity are increased energy harvesting by the microbiota, changes in metabolic pathways, and induction of low-grade inflammation [4]. Apart from obesity, the intestinal microbiome affects the outcome of gastrointestinal organ development, immune system maturation, bone homeostasis, and physiologic signaling, among other developmental processes, as well as pathologic processes such as inflammatory pathology, cardiovascular diseases, and obesity [5].

Clinicians may manage obese patients through nutrition, physical activity, behavior therapy, pharmacotherapy, and bariatric surgery [6]. The first clinical recommendation for obese patients is to increase physical activity in combination with diet and behavioral modifications. However, patients with a body mass index (BMI) of 30 kg/m^2 or greater and 27 kg/m^2 or greater who have comorbidities and have unsuccessfully tried diet and physical activity should be prescribed medications for weight loss. Patients with further increased BMI of 40 kg/m^2 or greater and 35 kg/m^2 who have comorbidities can undergo bariatric surgery [7].

Bariatric procedures in the United States in the last seven years have increased by 60%, with an estimated 252,000 procedures done in a year [8]. Sleeve gastrectomy (SG), Roux-en-Y gastric bypass (RYGB), and laparoscopic adjustable gastric band (AGB) make up most of the procedures [9]. The effects of these

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RESEARCH ARTICLE

Phytochemical Analysis and *In-vitro* Anti-Diabetic and Anti- Inflammatory study of root extract of *Apama siliquosa* LAMK.

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ABSTRACT:
The demand for herbal medicines in many pharmaceutical sectors is growing at a drastic rate due to their improved pharmacological actions, minimal side effects and cost-effectiveness. Anti-inflammatory phytochemicals are found to be efficacious against the treatment of inflammatory diseases like rheumatoid arthritis, glomerulonephritis, hepatitis, inflammatory bowel disease, etc. Anti-diabetic phytochemicals are found to treat the increasing incidence of diabetes prevalent globally. This work aims to perform the phytochemical screening and to evaluate the antidiabetic and anti-inflammatory activity of crude extract of *Apama siliquosa* Lamk. The method employed for obtaining the active principles includes soxhlation technique with methanol as solvent. The anti-inflammatory property was studied *in vitro* using inhibition of albumin denaturation technique as well as heat-induced hemolysis and IC_{50} value was found to be 39.5µg/ml and 36.30µg/ml respectively. The anti-diabetic activity was estimated using the alpha-amylase inhibition assay and Glucose diffusion inhibitory study. The IC_{50} value for alpha-amylase inhibition assay was found to be 15.75µg/ml. It also shows a strong inhibition of glucose across the dialysis membrane.

KEYWORDS: *Invitro* Antidiabetic, *Invitro* Anti-inflammatory, *Apama siliquosa Lamk,* α-amylase.

1. INTRODUCTION:

Over the past twenty years, there has been an enormous rise in the use of herbal medicine; however, there is still a lack of research data in this field. Therefore since 1999, WHO has published three volumes of the WHO monographs on selected medicinal plants. Modern searches for drugs utilize sophisticated bioassays and bioassay-guided fractionation of medicinal plants used in traditional system of medicine. This has resulted in the isolation of compounds with bio-potency and molecules with novel therapeutic targets[1].

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemia and impaired carbohydrates, lipids and proteins metabolism[2, 3]. Medicinal plants are being looked up once again for the treatment of diabetes. To date, over 400 traditional plant treatments for diabetes have been reported, although only a small number of these have received scientific and medical evaluation to assess their efficacy[4].

The inflammation is the earliest organic response before tissue damage or infection. Before a tissue injury, the local accumulation of prostaglandins, thromboxane's, and other chemical mediators cause a change in the threshold nociceptors, resulting in hyperalgesia. [5,6]. The inflammatory process is part of a mechanism of host defense against stimuli that cause injuries, but when this process is not controlled, can damage the health of the individual[7] The cardinal signs that identify the inflammation are heat, flushing (redness), tumor (swelling), pain and loss of function, of which the first four were described by Cornelius Celsus [8]. A number of

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SHORT COMMUNICATION ARTICLE

An Observational Study on the Analgesic usage in the Surgical Departments of A Secondary Care Hospital

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ABSTRACT

Since pain is multifactorial in nature, understanding both its complexity and side effects is imperative to attaining a positive surgical outcome. The extensive use of analgesics in pre-operative and post-operative pain management, apart from being irrational in most circumstances, has led to an increased cost-burden on the patient. This study aimed to evaluate the rationality of the analgesics prescribed and assess their use before and after surgery, including adherence to guidelines. This prospective observational study included 90 patients operated in the surgical departments of Orthopedics, General Surgery and Gynecology of a secondary care hospital. A total of 90 patients were included in the study out of which, the majority of the cases were clean wounds (58.8%), with the most frequently conducted surgery being K-wiring and ORIF (Open reduction internal fixation). The most widely prescribed analgesics were paracetamol, aceclofenac + serratiopeptidase, and diclofenac. About 65.6% of all the cases shown correct choice of analgesic, while 77.8% of the cases had correct doses, the frequencies of the analgesics prescribed were as per the guidelines in 74.4% cases and the adherence of prescribed analgesics to the existing guidelines was found to be22.2%. The analgesic use for pre-operative and post-operative pain management was divergent from the guideline recommendation due to lack of hospital guidelines, ineffective formulary management, influence of pharmaceutical companies.

Keywords: surgical, doses, hospital, Surgery, effects.

Pain is undoubtedly multifaceted, and understanding its complexity and side effects is vital to achieving an effective surgical outcome [1,2]. Over 8% of patients who undertake surgical procedures experience acute postoperative pain and approximately 75% of those with post-operative pain report the severity as moderate, severe or extreme. Many

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REVIEW ARTICLE

Bioactivity, Analytical Techniques and Formulative approaches for Embelin

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ABSTRACT:

Embelia ribes or black pepper contains many bioactive constituents of pharmaceutical importance. It contains alkaloids, tannins, fixed oils, and traces of volatile oils and benzoquinone derivative Embelin. Embelin (2,5-dihydroxy 3-undecyl, 1, 4-benzoquinone), a benzoquinone derivative has reported to have anticancer, anti-inflammatory, antimicrobial, anti-diabetic, wound healing, antioxidant, analgesic, antitumor and anthelmintic activities. Due to poor aqueous solubility, bioavailability its therapeutic potential is not fully utilized. This review summarises recent literature on biological, analytical and formulative aspects of EMB. Proposed mechanisms for various bioactivities of EMB are brought under limelight. UV double beam spectrophotometry, thin layer chromatography, high performance liquid chromatography (HPLC) and HPTLC techniques for EMB quantification are discussed. Types of dosage forms and its potential for controlled and targeted delivery of EMB are also discussed. This review will open the ways for development of an optimum formulation of EMB for its reported biological activities.

KEYWORDS: Embelin (EMB), bioavailability, solubility, formulations, controlled and targeted drug delivery.

INTRODUCTION:

The use of natural products gained significant popularity globally over the past few decades due to their potential health benefits. Natural products are often perceived as less toxic compared to synthetically derived products[1]. *Embelia ribes Burm. f*, as an important medicinal plant, has been used extensively in many Ayurvedic medicines for the treatment of various diseases over a long period of time.[2,3] It belongs to the family Myrsinaceae. It is medicinal woody climber commonly known as vidang or black pepper. This species is seen to be vulnerable in the Western Ghats of Tamil Nadu and Karnataka states of India and at a lower risk in Kerala state of peninsular India. E. *ribes* grows in semi-evergreen and deciduous forests at an altitude of 1,500 m, throughout India.[4]

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EMB has been reported to possess many pharmacological effects including antifertility[5], analgesic, anti-inflammatory[6], antioxidant, anti-diabetic [7,8], hepato-protective[9], anticonvulsant[10], anxiolytic[11], and antimicrobial activity[12]. The main parts of plants used include fruits (berries), roots and leaf, to cure various diseases. It has also found a valuable role in different diseases like Huntington disease, myocardial infarction, acute respiratory distress syndrome and ulcerative colitis.

Chemistry:

Chemical composition of *Embelia ribes* consist of embelin (2.3%), quercitol (1.0%), an alkaloid christembine; tannin; vilangin (methylene-bis-2-5-dihydroxy-4-undecyl 3-6-benzoquinone) from ripe fruit berries and fatty ingredients (5.2%), including resinoid, fixed oil and traces of volatile oil[13]. Phytochemical investigation resulted in three new compounds namely embelinol, embelia ribyl ester and embeliol. Along with high carbohydrates the seeds of *E.ribes* showed the presence of Cr, K, Ca, Cu, Zn and Mn[15].

Constituents of *Embelia ribes*

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REVIEW ARTICLE

A Review on Deadly Nipah Virus - Prevalence and its Management

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ABSTRACT:

NiV is an emerging infectious disease caused by infected bats from the family of Paramyxoviridae. From its secretions the disease can be spread to humans or through close contact with infected humans. NiV was detected for the first time in 1998 in Malaysia. NiV have broad species tropism and potential that may evolve life threatening respiratory and/ or neurologic disease in humans and as well as in animals which make them important trans-boundary biological threats. The disease presented mainly as acute encephalitis with a short incubation period of less than two weeks (4 to 18 days), with the main symptoms of fever, headache and giddiness followed by coma. The major involvement of the lung and brain in NiV infection often manifested as an acute severe respiratory syndrome, encephalitis etc. In case of Henipavirus the diagnosis of infection is mainly based on the details of contact with diseased animals, evidence of encephalitis and or pneumonia, with serologic evidence of infection using Enzyme Linked Immunosorbant (EIA) assay testing or polymerase chain reaction. The anti-viral drug Ribavirin is a well-known first line treatment strategy for suspected viral infections of unknown etiology. Based on a study conducted to discover whether combining monotherapeutic treatments with Ribavirin and Chloroquine would result in any protection indicative of favourable drug-drug interactions when treatment were initiated with lethal inoculums of NiV. The reason for multiple outbreaks may be due to low healthcare system capacity and robust surveillance strategy contributes to it. Multidisciplinary and multiple facet approach is vital in preventing the emergence of NiV. It is crucial to undertake rigorous research for developing vaccines and medicines to prevent and treat NiV.

KEYWORDS: Nipah virus (NiV), Enzyme linked immunosorbant assay (EIA), Ribavirin.

INTRODUCTION:

Nipah virus (NiV) is a second member of the genus Henipavirus in the family of bat-borne Paramyxoviridae. The prototype members of the genus is the closely related Hendra virus[1]. In case of Nipah virus, each of which have repeatedly emerged causing significant morbidity and mortality in both animal and human populations since the mid to late 1990's[2].

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Both viruses are capable of causing severe disease in humans, horses and swine, and of infecting a number of other mammalianspecies[3]. The studies about NiV suggest the main reservoir of virus appears to be period fruit bats, which eliminate the virus in their urine or saliva.

Based on the time interval between last exposure to pigs and subsequent onset of illness in humans, the incubation period ranged from 4 days to 2 months with more than 90% of patients giving a history of 2 weeks or less. The rate of subclinical infection ranged from 8 to 15%[4-6]. The Nipah virus is probably the easiest virus to

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REVIEW ARTICLE

A Comprehensive Review on Medicinal Plants in Western Ghats with Antitubercular Activity

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ABSTRACT

Treatment of TB has become a challenge in recent times due to development of multi drug resistant forms. This has been further complicated by co infection with HIV and diabetes. TB infection is forecasted to rise by 20% in the next 20 years. The western slop of southern Western Ghats is a repository of medicinal plants with high content of active constituents. This review summarise plants abundant in Western Ghats with proven anti TB activity along with their active constituents. Also, various methods to identify anti TB activity is elaborated. The study identified various active chemical moieties which can be further modified to optimise anti TB activity. Studies to identify the usefulness of using these plants extracts along with regular drug treatment can be initiated to combat multi drug resistant TB forms.

Keywords: Tuberculosis, Medicinal Plants, Western Ghats, *In-vitro* Screening Methods

INTRODUCTION

Tuberculosis (TB) is chronic infectious disease. Infection was affected through the lung with acid-fast bacillus *Mycobacterium tuberculosis*, was first identified as a pathogen by Robert Koch in 1882 [1]. With over 9 million cases and 1.5 million deaths annually, tuberculosis is the deadliest known infectious disease. Worldwide tuberculosis (TB) is one of the leading cause of mortality from a single infectious agent and the leading cause of death for persons suffering from HIV infection. This account for about 40% of death in world population. India is one among the top 20 high tuberculosis burden countries with increasing burden of multidrug resistant tuberculosis and coinfection with Diabetes mellitus and HIV infection. The prevalence of tuberculosis varied based on the sex and distribution of population in urban and rural areas. The prevalence was higher in male population in urban areas and female population in rural areas. Some epidemiologist forecast a rise of 20% incidence in the next 20 years. There will be a cumulative rise in TB cases largely due to HIV pandemic. As a result of emergence of resistance by mycobacterium

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RESEARCH ARTICLE

Microwave Assisted Synthesis and Antibacterial Evaluation of 1, 3, 4-Thiadiazole Derivatives

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ABSTRACT:

1,3,4-Thiadiazole is an important heterocyclic moiety, forms an integral core structural component of different categories of drugs such as antimicrobial, antitubercular, anti-inflammatory, antiepileptic, antiviral, antineoplastics, and analgesic agents. It is a key moiety in current discovery and designing of new drugs. The compounds were synthesised by both conventional method and microwave method. The targeted derivatives can be synthesised in a shorter time under microwave condition than under conventional reaction condition. Their structures were confirmed by FT-IR and NMR Spectroscopy. Antibacterial property of two synthesised analogs were evaluated by Agar well diffusion method against *Escherichia coli* and *Staphylococcus aureus.* The results of antibacterial activity showed that both the compounds were active against Staphylococcus *aureus* and inactive against *Escherichia coli*. Results of *invitro* studies showed that modifications in SB-2-PHB and SB-8-PHB will make it as a promising lead molecule for further research.

KEYWORDS: 1, 3, 4-thiadiazole; Microwave method; Antibacterial activity; Agar well diffusion.

1. INTRODUCTION:

Multi-drug-resistant pathogens are a challenge for existing therapeutic options, and their increasing occurrence mandates the discovery and development of novel treatment strategies.[1] Heterocyclic compounds are one of the most preferred compounds in antimicrobial studies and many involve 1,3,4-thiadiazole and their derivatives[2]. Thiadiazole nucleus is a core structural component of different categories of drugs[3] such as antimicrobial[4], antitubercular[5], anti-convulsant[6], anti-inflammatory[7], antiviral[8], antineoplastic[9] and analgesic agents[10].

For example, Acetazolamide, megazol, methazolamide, cefopram etc[11]. It also possess antioxidant[12] and antidiabetic activity[13]. Hence, synthesis and characterization of such bioactive compounds containing 1, 3, 4-thiadiazole are being studied intensely[14]. Conventional synthesis reactions suffered from drawbacks such as the use of high boiling solvents, long reaction time and lower yields. MW irradiation is currently used to carry out a wide range of reactions.[15,16] Compared with the traditional heating reactions, the microwave (MW) reaction technique is often rapid, more convenient and has environmental, and economic advantages[17,18].

The purpose of this study is to synthesise various 1, 3, 4-thiadiazole derivatives by using both conventional and microwave method and perform the evaluation of antibacterial activity of synthesised molecules.

2. MATERIALS AND METHOD:

All the chemicals and reagents used were of analytical or synthetic grades.

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RESEARCH ARTICLE

Phytochemical analysis and *In vitro* Antidiabetic activity of aqueous extract of *Lagerstroemia speciosa* and *Aegle marmelos*

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ABSTRACT:
Diabetes Mellitus is a metabolic disorder characterized by hypoglycemia, resulting from absolute or relative deficiency of insulin. Worldwide about 220million people affected. Low-cost herbal treatment is recommended due to their lesser side effect. The aim of the current study was to determine the antidiabetic activity of aqueous leaf extracts of *Lagerstroemia speciosa* (Lythraceae) and *Aegle marmelos* (Rutaceae) using alpha amylase inhibition assay and glucose diffusion inhibition assay. In alpha amylase inhibition assay, the leaf extracts of *A.marmelos* (at a concentration 100µg/ml) exhibited 54.68% of α amylase inhibitory activity with an IC 50 values 92.04µg/ml whereas the leaf extracts of *L. speciosa* (at a concentration of 100µg/ml) exhibited 60.36% of α amylase inhibitory activity with an IC50 value of 68.19µg/ml .However the mixture of plant extracts (at a concentration of 100µg/ml) exhibited 94.87% inhibition with an IC50 value of 13.145µg/ml. Both plant extracts showed appreciable α amylase inhibitory effects, but the mixture showed more inhibitory effects than the individual plant extracts. In glucose diffusion inhibition assay, the aqueous extract of *A. Marmelos* leaves exhibited maximum glucose diffusion inhibition (76.886%) at 150 minutes as well as *L. Speciosa* leaf extract showed the maximum inhibition of 79.5357% at the same time interval. The mixture of plant extracts exhibited 87.4274% inhibition at 150 minutes which produces more effects than the two plants.

KEYWORDS: *In vitro* antidiabetic; *Lagerstroemia speciosa*, *Aegle marmelos*, Alpha- amylase inhibition assay, Alpha- amylase inhibition assay.

1. INTRODUCTION:

Diabetes mellitus (DM) is a group of metabolic disorder in which there are high blood sugar levels over a longer period due to either the pancreas not producing enough insulin or the cells of the body not responding properly to the insulin produced. Insulin is a hormone produced in pancreas that helps transport glucose from the blood stream into the cells so they can break it down and use it for fuel. The international diabetic federation has predicted that the number of people with diabetes worldwide will increase drastically by 2030[1,2]. DM occurs throughout the world but more common in most of the developed countries.

The increasing rate in developing countries follows the trend of urbanization and sedentary life style, less physically demanding work and global nutrition transition, marked by increased intake of foods that are high energy dense but nutrient poor[3]. The present study aim to evaluate and compare the antidiabetic activity of aqueous leaf extract of *Lagerstroemia speciosa* and *Aegle marmelos.*

Aegle marmelos, is locally known as Bael, golden apple, bili. species native to India, Nepal, the Andaman and Nicobar islands. This is a subtropical plant belongs to Rutaceae family. This herb is used extensively in the Indian traditional system of medicine the Ayurveda folk medicine to treat many diseases. The leaves maintain the blood sugar levels under control and roots may improve the digestion[4,5,6.] It mainly exhibits antioxidant activity[7,8], Antidiabetic activity[9], Cardio protective activity[10,11], Anti-inflammatory activity[12], Antiarthritic activity[13], Antifungal activity[14], Antibacterial activity[15,16], anti-cancer activity[17] and Antiulcer activity[18,19]. It also possess some significant cytotoxicity.[20.]

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RESEARCH ARTICLE

Paediatric Prescribing Pattern: Being AWaRe

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ABSTRACT

WHO introduced AWaRe (Access, Watch, Reserve) Tool in its Essential Medicines list (EML) in order to reduce the spread of antimicrobial resistance, antibiotic-related adverse events and cost of drugs. This has great importance when used to analyse antibiotic use by paediatric populations as they are high risk of detrimental effects from improper use of antibiotics. The study is aimed to analyze the utilization of antibiotics in Paediatrics as per WHO AWaRe guidelines. A Retrospective, Observational study carried out in one of the quaternary care hospital for a period of 11 months, starting from August 2019 to July 2020. This study analyses the antibiotic prescribing pattern in Paediatric population in accordance with AWaRe tool, along with the Access to Watch index and Amoxicillin clavulanic index. A total of 4875 prescriptions were obtained from both Inpatient (IP) and Outpatient (OP) departments. In OP, the median of access to watch index in young children (<6 years) were found to be 2.38, with intra quartile range (IQR 0.5 - 4.07) while, the median of access to watch index in IP patients were found to be 0.36 (IQR 0.16 - 0.75). Amoxicillin-clavulanic acid was the most prescribed antibiotic, within overall Amoxicillin-Clavulanic acid Index (amoxiclav index) less in IP patients with a mean of 11.58%, compared to OP (41.32%). It is observed in the study that, in Outpatient setting more than 2 access antibiotics being prescribed for each unit of watch antibiotics, among young children whereas in the inpatient setting, less than one access antibiotics was used for each unit of watch antibiotics. The

Anaphylatic Shock with Off-Label use of Oxaliplatin in Ovarian Cancer: A Rare Case Report

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ABSTRACT

Oxaliplatin is a third-generation platinum compound that acts on DNA (Deoxyribonucleic acid) to form inta/inter stand cross-linking and thereby affecting DNA base pairing, replication, gene transcription, and leading to cell death. Anaphylactic reactions associated with platinum compounds are potentially life threatening. A 67-year-old female patient, a known case of carcinoma ovary, previously underwent surgery and multiple lines of chemotherapy now presented with progressive disease. She got admitted for evaluation and management. She recently presented with complaints of fever and fatigue. The patient had a history of allergy to carboplatin. After pre-chemo evaluation, the first cycle of chemotherapy was started with the combination of Cyclophosphamide, Oxaliplatin, and Bevacizumab. Sudden after the administration of Oxaliplatin patient had developed fatigue, weakness along breathing difficulty, change of sound, and cyanosis. The patient was shifted to MICU (Medical Intensive Care Unit) and managed. After that remaining chemotherapy was administered successfully and the patient got discharged. This case highlights the consequence of Oxaliplatin induced anaphylactic shock which is rare but potentially fatal and so oncologists should be vigilant when patients have signs or symptoms similar to anaphylactic reactions.

Key words: Oxaliplatin, Ovarian cancer, Chemotherapy, Platinum compounds, Anaphylactic reactions.

INTRODUCTION

Oxaliplatin is a third-generation platinum compound approved by the FDA for the treatment of colorectal cancer. Since phase II studies in metastatic breast cancer have shown some efficacy with oxaliplatin.[1,2] This medication is one of the rare broad-spectrum agents that act with DNA to form inta/inter stand cross-linking and affecting DNA base pairing, replication, gene transcription leading to cell death.[3] This platinum complex differs significantly from cisplatin by targeting different biomolecules. Oxaliplatin does not easily develop resistance and remains active against cancerous tissue even in the presence of resistance to cisplatin. Anaphylactic reactions related to platinum compounds are potentially life-threatening. These undesirable reactions produced by the immune system are most serious and can lead to death without adequate medical attention. Anaphylactic reactions were found to be less common with oxaliplatin when compared with other platinum compounds. Currently, Oxaliplatin is used off-label in various malignancies leading to an increased incidence of hypersensitivity reactions (10–12%,) with the rate of severe reactions >1%.[4]

CASE DESCRIPTION

A 67-year-old female patient, a known case of carcinoma of the ovary, previously underwent surgery and received multiple lines of chemotherapy as she was presented with progressive disease on evaluation.

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Assessment of Lockdown Effectiveness in the Wake of COVID-19 in India Using the Auto Regressive Integrated Moving Average Model

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Background: The novel coronavirus disease (COVID-19) has been recognized as a global threat, and several studies are being conducted using various mathematical models to predict the probable evolution of this epidemic, which are subject to potential bias. In this study, we aimed to assess and compare the impact of lockdown among the Punjab, Delhi, and Gujarat states of India using the Auto Regressive Integrated Moving Average (ARIMA) model by comparing forecasted COVID-19 data with real-time data.

Methods: We analyzed the COVID-19 data of Indian states from the index case until May 17, 2020. Auto Regressive Integrated Moving Average (1,1,3) (0,0,0) model was used to forecast the possible cumulative cases until May 17, from data up to May 3, and compared with real-time data. Recovery rate, case-fatality rate, and test per millions of states were collated.

Results: The trend of cumulative cases in Punjab was moving downward below the forecasted lower confidence limit ($R^2 = 0.9799$), whereas the cumulative case trend of Delhi was moving along the forecasted upper confidence limit with the forecasted data until May 3 ($R^2 = 0.9971$) and the trend of cumulative cases was below the forecasted upper confidence limit ($R^2 = 0.9992$) in Gujarat.

Conclusions: In Gujarat and Delhi, the lockdown was not effective in controlling the rise in COVID-19 cases even after the 56th day of lockdown, whereas the Punjab state succeeded in preventing havoc of COVID-19. In lieu of lockdown, using facemasks and improving ventilation in closed workspace settings, crowded spaces, and close-contact settings are more pragmatic than keeping away from others in India.

Key Words: lockdown, COVID-19, ARIMA model, community transmission, India

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The novel coronavirus disease (COVID-19), first reported in Wuhan, China, was declared a pandemic by the World Health Organization on March 11, 2020.[1] India's first positive cases were 3 students from Kerala (Indian state) who had traveled from Wuhan.[2] As of May 17, India has been reported to have 95,484 cases, 3021 deaths, and 36,536 recoveries from COVID-19 infection.[3]

COVID-19 is thought to spread mainly through close contact from person to person while diagnostic laboratory testing remains the cornerstone of the management of the COVID-19 pandemic. The World Health Organization's strategic objectives are to cut human-to-human transmission by reducing secondary infections among close contacts, health care workers, preventing transmission amplification events, halting further international spread moreover, to identify, isolate, and care for patients for providing optimized care for infected patients. This can be achieved through a combination of public health measures, such as rapid identification, diagnosis, and management of the cases; identification of and follow-up on the contacts; prevention of infections in health care settings; implementation of health measures for travelers; awareness-raising in the population; and risk communication.[4]

National responses to the COVID-19 pandemic have been varied and have included containment measures such as lockdowns, quarantines, and curfews. Social distancing, also called "physical distancing," means keeping space between ourselves and other people outside of our home. Isolation separates sick people with a contagious disease from people who are not sick. Quarantine separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick. The practice of quarantine, as we know it, began during the 14th century in an effort to protect coastal cities from plague epidemics. Ships arriving in Venice from infected ports were required to sit at anchor for 40 days before landing. This practice, called quarantine, was derived from the Italian words *quaranta giorni*, which means 40 days.[5] More than 4 billion people around the world are in some form of lockdown because of the COVID-19 pandemic.[6]

The Indian government has introduced social distancing as a precaution to avoid the possibility of a large-scale population movement that can accelerate the spread of the disease and also implemented a 14-hour voluntary public curfew on March 22, 2020. Furthermore, the prime minister of India also ordered a nationwide 21-day lockdown at midnight on March 24 to slow the spread of COVID-19, affecting India's entire 1.3 billion population. Because there is no vaccine, social distancing has been identified as the most commonly used prevention and control strategy.[7] In a large country like India with so much diverse population, it is not at all feasible to lock down (home quarantine) all susceptible population. A certain percentage of the population may be successfully home quarantined during the lockdown period. In this study, we aimed to assess and compare the impact of lockdown between the Punjab, Delhi, and Gujarat states of India.

COVID-19 has been conceded as a global threat, and several studies are being conducted using various mathematical models to predict the probable evolution of this epidemic. These mathematical models based on various factors and analyses are subject to potential bias.[8] Here, we propose a simple econometric model that could be useful to predict the spread of COVID-19. We performed the Auto Regressive Integrated Moving Average (ARIMA) model prediction on the COVID-19 data of a few Indian states to predict the epidemiological trend of the prevalence and incidence of COVID-19, thereby comparing real-time data with forecasted data using the ARIMA model to assess the effectiveness of lockdowns in preventing coronavirus spread.

MATERIALS AND METHODS

In this observational study, we collected and analyzed the data of states from the index case until May 17, 2020. We divided

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IN-VITRO CYTOTOXIC STUDY ON ROOT EXTRACTS OF *APAMA SILIQUOSA* LAMK.

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Keywords:

Apama siliquosa Lamk, Brine shrimp lethality assay, MTT assay

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ABSTRACT: The demand for herbal medicines is growing at a drastic rate due to their improved pharmacological actions, minimal side effects, and cost-effectiveness. The ever-increasing cost of chemotherapy ruined the economic stability of many families. This led to the discovery of herbal medicines for cancer treatment. Tribes of Western Ghats have been using the roots of *Apama siliquosa* for cytotoxic activity. The methanolic and aqueous root extracts of *Apama siliquosa* Lamk were used to prepare different concentrations. These different dilutions of extract were used to carry out brine shrimp lethality assay & the LC_{50} value was determined. Cell line study by MTT assay using cancerous cell line (MCF7 cells-human breast adenocarcinoma cells) & LC_{50} value was determined. GCMS study on plant extract was carried out. The methanolic extract shows the presence of Caryophyllene oxide (m/z 220) methyl ester of Aristolochic acid I (m/z 355), Aristolactam I (m/z 295). Aristo lactam II (m/z 265), and Aristo lactam III (m/z 281). The aqueous extract shows the presence of Aristo lactam I (m/z 280). Aristo lactam II (m/z 264). Caryophyllene oxide and Aristolochic acids are terpene and alkaloid, respectively. LC_{50} value for aqueous and methanolic extract was found to be 102.32µg/ml & 91.20µg/ml respectively by brine shrimp lethality assay and the same by MTT assay was found to be 117.527µg/ml & 87.4056µg/ml respectively for breast cancer cell line (MCF7 cells). These led to the conclusion that both extracts showed excellent toxicity to the naupli and mild toxicity to cell lines.

INTRODUCTION: Plants have been used for medicinal purposes since ancient times. The ever-increasing cost of cancer chemotherapy ruined the economic stability of many families [1]. Between 9 and 81% of cancer patients are said to use at least one type of complementary or alternative therapy after their cancer diagnosis [2]. *Apama siliquosa* (L.) belonging to Family Aristolochiaceae, is a shrub found in evergreen forests of the Western Ghats from Konkan to Kerala.

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It is extensively studied for various pharmacological activities such as antibacterial, anti-fungal [3], anti-diabetic and anti-inflammatory [4] activity. The compound aristolochic acid present in *Apama siliquosa* is expected to show tumor inhibitory activity hence could be used for cancer therapy [5].

The mature roots of *A. siliquosa* are reportedly used by Ayurvedic physicians of Konkan and Malnad districts of Karnataka, India for the treatment of dysentery, cholera, carbuncles and inveterate ulcers. Like other plants belonging to the family Aristolochiaceae, it is supposed to have virtues in the cure of snakebites and is regarded as one of the most powerful antidotes to poison known on the west coast [6]. Cancer is a major cause of death worldwide. Thus, the incidence of and

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REVIEW ARTICLE

Candida auris Infection and Its Natural Remedies

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ABSTRACT

Antimicrobial resistance is a major problem in medical field. The antifungal resistance although considered secondary is another area which need focused approach. There is a surge in researches which test the antimicrobial potential of various chemicals. Agents from natural sources find more potential as antimicrobials. Plants have a wide range of pharmacological activities including antifungal and antibacterial activities. This review article summarizes the emergence of *Candida auris* infections in India, diagnosis in *Candida auris* infections, its infection sites, virulence factors, and the mechanisms of antifungal resistance for this multi-resistant *Candida* species. This article also reviews the natural remedies for *Candida auris* infections.

Key words: Plants, *Candida auris*, antifungal, natural, infections

INTRODUCTION

Annual death from fungal infections count to 1.6 million and serious fungal infections affect 300 million people. Of the 1.5 million fungal species present in worldwide, more than eight thousand are known to cause disease in plants and 300 to be pathogenic to humans[1].Candida is one of the most common fungal pathogens and it is known as the major cause of health-care related infections among both immunocompetent and immunosuppressed hosts. Candida represents the major cause of opportunistic mycoses worldwide. The frequency of healthcare-related candidemia is considered as the most common bloodstream infections in the intensive care units[2].*Candida albicans* is the major *Candida* species and *C. glabrata*, *C. parapsilosis*, *C. tropicalis*, *C. krusei* and *C. auris* are the non-albicans *Candida* species in Hospital acquired invasive candidiasis globally[3].The crude mortality rate from *C.auris* infections has been documented ranging from 30% to 72% [4]. *Candida auris* was first isolated in 2009 from the external ear canal of a

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REVIEW ARTICLE

Famotidine: Pharmaceutical Aspects and Related Facts

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ABSTRACT

Famotidine is a receptor H2 blocker secretion in the stomach. Famotidine is currently used for the treatment of gastric ulcer, Zollinger elision syndrome and GRED.However, randomized clinical trial revealed that duodenal ulcers. Famotidine is a BCS classification IV drug with low aqueous solubility and permeability. The oral bioavailability of famotidine ranges from 40-50% with usually preferred oral dose of 40mg. The protein binding was found to be 15-22% with minimum first pass metabolism. Among the H2 receptor blocker like Cimetidine & ranitidine, famotidine is 100 times more potent than cimetidine and 6 to 17 times more potent than ranitidine. Famotidine is classified as regency category B drug and can be used during regency if needed. Different formulate approaches were developed to enhance the gastric residence time and controlled delivery of drug like floating effervescent tablets, microbeads, proniosomes and mucoadhesive systems. Famotidine can be estimated in plasma by HPLC, micelle rextaction technique, tanden mass spectroscopy. A recent study revealed the ability of Famotidine to reduce canine gastric blood flow induced by NSAIDS. The current approach of developing famotidine formulation is based on the enhancement of drug release and to achieve more controlled release pattern. Since Famotidine specifically works by reducing the amount of acid produced in the stomach.

Keyword : Famotidine,Zollinger-ellison, Gastric esophageal reflux disease, HPLC.

INTRODUCTION

Famotidine is a histamine H2 blocker antagonist. The drug is commonly used in the treatment of gastric ulcer, duodenal ulcer, Zollinger-ellison syndrome, reflex disease, endoscopically diagnose and esophageal reflex disease. In the treatment of benign duodenal and gastric ulcer, the oral dose and around 40 mg, daily for 4 to 8 week in bed time. Where as in GI reflux the dose will be 20 mg orally for around 6 to 12 weeks. In case of esophageal ulceration the oral doses is around 40 mg twice in a day. In in case of heartburn or non-ulcer dyspepsia the dose is around 10