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Mucoadhesive Drug Delivery System: A Comprehensive Overview of Penetration Enhancers

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KEYWORDS

Buccal drug delivery, penetration enhancers, first-pass metabolism, bioavailability.

ABSTRACT:

Buccal medication administration is a relatively new technique that has gained favor in recent years as a result of its many benefits over more conventional dose forms. It is ideal for the buccal distribution of drugs that have a short biological half-life, a low molecular weight, poor water solubility, an unstable stomach pH, a low dose, and a high first-pass metabolism. Drug absorption is hindered by the buccal mucosa's complicated structure. Therefore, penetration enhancers are used in conjunction with the medications to increase the bioavailability of the delivered drug by improving drug absorption across the buccal membrane. Improved drug partitioning across the buccal mucosa, interactions with intracellular lipids and proteins, and an extended retention time surrounding the mucosa are all mechanisms by which penetration enhancers exert their effects. In order to better [illegible] function of penetration enhancers and how they considerably boost medication

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DEVELOPMENT AND VALIDATION OF UV VISIBLE SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF LAMOTRIGINE IN BULK AND PHARMACEUTICAL DOSAGE FORMS

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ABSTRACT

Lamotrigine is an anticonvulsant drugs used in the treatment of epilepsy and bipolar disorder A simple, sensitive, accurate and reproducible UV/visible spectrophotometric method was developed for the determination of lamotrigine in bulk and pharmaceutical dosage forms. The solvent distilled water and wavelength corresponding to maximum absorbance for the drug was found at 300nm. Drug obeyed beer's law in concentration range of 1to 5 ug/ml. With a correlation coefficient of 0.9990. The linear regression equation obtained was y =0.1371x+0.0168, where y is the absorbance and x is concentration of pure drug solution. The method was validated for several parameters such as Linearly, Accuracy, precision, Robustness as per ICH guidelines. The % recovery value with is close to 100% indicates reproducibility of the method and absence of interference of the excipients present in the formulation. The authors conclude that the proposed spectrophotometric method for the estimation of lamotrigine can be used for routine analysis of lamotrigine is bulk as well as in tablet dosage form.

KEYWORDS: Lamotrigine, Dimethyl sulfoxide, Spectrophotometry.

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INTRODUCTION

The aim of the present investigation was to devise a straightforward, exact, and reliable Spectrophotometric assay technique, and to validate it for the quantification of Lamotrigine

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An International Open Access, Peer-reviewed, Refereed Journal

A PROSPECTIVE STUDY ON PREVALANCE OF OBESE AND IMPACT OF BMI ON VITAL SIGNS

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Abstract :

BACKGROUND: This study explores the significant impact of Body Mass Index (BMI) on vital signs in an effort to understand the complex link that exists between anthroponmetric measurements and physiological parameters. Investigating the relationship between BMI and important vital signs, such as pulse rate, blood pressure, peripheral oxygen saturation is the main goal. The study uses statistical analyses and sophisticated measurement techniques to explore the complex relationship between BMI and each vital sign separately.

AIM: To determine the impact of BMI on vital signs i.e., blood pressure, pulse rate, peripheral oxygen saturation.

MATERIALS AND METHODS: The study was conducted in the district of Warangal for six months. All the relevant data and necessary information were collected from the individuals consent profile form and by individual history interview.

RESULTS: We recruited a total of 1000 individuals for our study, of which 530 were male and 470 were female. Individual demographic information such as age, gender, education, employment, height, weight, BMI, blood pressure, pulse rate, SpO2%, previous history, family history, and social history were collected from the participants using a data collecting form. The results of the correlation study indicated a substantial positive association between BMI and the following variables: family history, age, weight, systolic and diastolic blood pressure, and Pearson correlation values (0.135, 0.803, 0.114, 0.142, and 0.117; regression of weight = 0.645; significance = < 0.01). Subsequent investigation showed that being overweight or obese is associated with an increased risk of blood pressure compared to a normal weight, as well as an increased chance of being overweight and obese.

CONCLUSION: According to our study, BMI showed a negative connection with SpO2% and a significantly high positive correlation with age, weight, SBP, and DBP. The complex relationship between BMI and overall health is highlighted by the association that was found, underscoring the importance of considering multiple factors when assessing an individual's well-being.

IndexTerms **- Body Mass Index (BMI), Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DPB), Pulse rate, Peripheral Oxygen Saturation.**

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A SYSTEMIC REVIEW ON BIPOLAR DISORDER

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ABSTRACT :

Bipolar disorders are recurrent, chronic conditions that impact more than 1% of the world's population. Bipolar disorders are the primary cause of disability in young individuals because they can impair cognitive and functional abilities and increase death, especially from heart disease and suicide. Medical comorbidities, both psychiatric and nonpsychiatric, are prevalent in patients and may potentially raise mortality. Although a model with gene-environment interactions is thought to best explain the aetiology, bipolar illnesses are among the most heritable psychiatric disorders. Since bipolar illness is often characterized by nonspecific symptoms, mood lability, or depressed episodes that can resemble unipolar depression in presentation, it can be challenging to make an early and correct diagnosis in clinical practice . Furthermore, sufferers' relatives don't always.

I. INTRODUCTION

Bipolar disorder is a common, chronic, and often severe cyclic mood disorder characterized by recurrent fluctuation in mood, energy, and behavior. It differs from recurrent major depression (or unipolar depression) in that a manic or hypomanic episode occurs during the course of the illness. Bipolar disorder is a lifelong illness with a variable course and requires both nonpharmacologic and pharmacologic treatments for mood stabilization. (1)

Psychoeducation, self-help, and psychotherapy (individual, couple, and family) therapies are commonly used, and there are now more pharmaceutical choices accessible. In order to better educate patients, their families, medical professionals, mental health experts, and the general public on manic-depressive disorder, the Depression and Bipolar Support Alliance has assumed a leadership role. In order to gather data, the National Alliance of the Mentally I (NAMI) has also surveyed family members regarding the use and worth of mental health treatments. (2)

II. EPIDEMIOLOGY:

The lifetime prevalence of bipolar disorder in the United States is 4.5% with 1% of patients meeting criteria for bipolar I, 1.1% for bipolar II, and 2.4% of patients with subthreshold bipolar disorder (i.e. cyclothymia, unspecified bipolar disorder). Symptom onset for depression, mania, or hypomania in bipolar disorder typically occurs in late adolescence or early adulthood, with greater than two-thirds of those affected developing symptoms before age 18 years. Depression and mixed presentations may occur more frequently in women. (3)

Over 70% of people exhibit clinical symptoms of the illness before the age of 25, with two peaks in the age of start occurring between the ages of 15 and 24 and 45 and 54. In comparison to rural regions, bipolar disorder is more common in metropolitan settings, regardless of sex or race.

Male-to-female ratios of 1:1 and lifetime prevalences of between 0.4 and 1% are linked to cyclothymia. (4)

III. AETIOLOGY:

The exact etiology of bipolar disorder is unknown, but is thought to be influenced by a complex of developmental, genetic, neurobiological, and psychological factors. Many theories have been proposed regarding the pathophysiology of mood disorders. Family, twin, and adoption studies report an increased lifetime prevalence risk of having mood disorder among first-degree relatives of patients with bipolar disorder. (5)

Childhood maltreatment—especially emotional abuse or neglect—has been connected to the later development of borderline personality disorder (BD), notwithstanding the difficulty in establishing a causal relationship between life events and the condition's development. Childbearing, divorce, unemployment, disability, and the loss of early parental figures are other stressful life events linked to the development of BD. In their adult years, over 60% of BD patients report having had at least one "stressful life event" in the six months before to a manic or depressive episode. (6)

3 Biotech. 2023 Nov;13(11):377. doi: 10.1007/s13205-023-03784-9. Epub 2023 Oct 24.

Sesamol combats diabetogenic effects of atorvastatin through GLUT-4 expression and improved pancreatic viability

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Abstract

Statin-associated diabetes (SAD) is an issue that has come to light after a series of recent clinical trials that has led to the issue of a black box warning for statins by the US FDA. However, the benefit of statin outweighs its risk. Nevertheless, experiments have been conducted to identify the mechanism by which statins aggravate the risk of diabetes only in a select population who bear the risk factors of obesity, sedentary lifestyle, hypertension, and other associated risk factors of lifestyle disorders. In this study, the possibility of utilization of a phyto-molecule, sesamol, for its ability to combat statin-associated diabetes using atorvastatin as the agent of choice has been explored. MMP assay and western blot was conducted to investigate the effects of atorvastatin on apoptotic cascade with sesamol as a protective agent was conducted in MIN-6 cells. Effect of the combination was tested in L6 cells with 2-NBDG uptake assay and as well as western blot for GLUT-4. A diet-induced hypercholesterolemia model was developed in an in vivo model animals and treated with atorvastatin and sesamol with histopathological analysis being carried out to evaluate the apoptotic markers and GLUT-4 presence. It was found that sesamol can combat pancreatic beta cell apoptosis via the internal apoptotic pathway activated by atorvastatin. With regards to muscle cells, sesamol could improve the GLUT-4 vesical production, but not improve glucose uptake which is inhibited by atorvastatin. These findings are further confirmed by animal studies. These findings indicate that sesamol can serve as a prototype molecule for further development and investigation of similar compounds to tackle SAD.

Keywords: Atorvastatin; Drug-induced diabetes; New-onset diabetes; Statin.

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Research Article

Pharmacological Evaluation Of *Prunus Persica* Pulp Extract In Urolithiasis Rat Model.

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ABSTRACT

The pathogenesis of urolithiasis involves a complex interplay of genetic, environmental, and metabolic factors that lead to the formation of calculi within the urinary tract. Prunus persica, commonly consumed worldwide for its antioxidant and diuretic properties, has traditionally been explored for its potential to disrupt or dissolve kidney stones. However, scientific evidence supporting its efficacy in treating urolithiasis is lacking. This study aims to pharmacologically evaluate the hydroethanolic extract of *Prunus persica* pulp in a urolithiasis model. Urolithiasis was induced in male Wistar rats using ethylene glycol and ammonium chloride. Biochemical parameters were measured in urine and serum samples, while kidney homogenates were analyzed for calcium, oxalate, and phosphorus content. The *Prunus persica* pulp extract significantly reduced urinary levels of calcium, oxalate, phosphate, citrate, magnesium, protein, and uric acid in rats with urolithiasis. Additionally, serum levels of BUN, creatinine, and uric acid were lowered in rats treated with the extract. Kidney parameters showed a decrease in the deposition of calcium, oxalate, and phosphate in the *Prunus persica* pulp extract-treated groups. The hydroethanolic extract of *Prunus persica* pulp effectively reduced key biochemical markers and kidney deposits associated with urolithiasis in male Wistar rats. These results suggest its potential as a therapeutic agent for urolithiasis.

Keywords: Renal calculi, *Prunus persica* extract, Ethylene glycol model, Kidney stone treatment, Diuretic effects.

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Research Article

Jojoba Oil Hastens Dexamethasone Induced Delayed Wound Healing: A Preclinical Study

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Abstract

Background: Wound healing is a complex, multifactorial process in which poor healing in chronic wounds has emerged as the most significant complication in recent years. Jojoba oil (JO) has been traditionally used for its medicinal properties, especially for skin disorders. Studies suggested its potential wound-healing activity in-vitro. However, the underlying mechanism by which JO promotes the rejuvenating process is unclear in-vivo. The present study was aimed at evaluating the wound-healing activity of JO in both normal and delayed healing.

Methods: Excision wounds were inflicted by surgical method on the anesthetized rats. Animal wounds were explored for their healing activity by photography in-vivo. Expression of ERK, collagen, VEGF and PDGF was investigated using western blot.

Results: Topical administration of JO (0.5 ml/wound, twice a day) showed significant wound healing activity. All groups demonstrated a significant increase ($p<0.001$) in wound contraction percentage except dexa+JO versus control. 100% wound closure was seen on day 12 in JO treated group when compared to the control which showed complete closure on day 15. We found that JO-treated animals showed an increase in the expression of collagen, VEGF, PDGF and ERK whereas dexamethasone displayed no expression. In the histopathology and Masson trichrome staining, the control group showed granulation tissue with no scab and epithelium, dexamethasone group exhibited the presence of less granulation tissue when compared with the control and treatment groups. The JO group depicted mature granulation tissue with more epithelial growth and the dexa+JO group, showed granulation tissue with little epithelial growth when compared, with the JO group. Masson trichrome staining showed matured collagen in the JO group when compared with the diseased group.

Conclusion: These findings suggest that JO activates ERK signaling, collagen formation, VEGF, PDGF expression which shows the plausible potential of JO in accelerating the healing process, more efficiently in delayed wound healing.

Introduction

Wound healing is a complex, firmly regulated process which is essential for skin's barrier function to remain intact.[1] A fully healed wound is one that has returned to its original anatomical form, function, and appearance within a fair amount of time, normally after a simple injury. It may also be described as a wound that has healed completely without the need for drainage or dressing.[2] Some wounds, on the other hand, do not heal in a timely and orderly fashion, leading to permanent, non-healing wounds. Delay in wound healing remains a major problem[3] and is associated with diseases like diabetes, obesity and hypertension.[4] Delayed wounds start off as acute wounds with a fibrin clot, but they get caught in an inflammatory process for a long time. It has been suggested that the prolonged inflammatory process induces an increase in the levels of matrix metalloproteases (MMPs), plasmin, thrombin and elastase like proteases which destroy extracellular matrix (ECM) components thus damaging growth factors, and their receptors, all of which are essential in the healing process.[5] Examples of chronic wounds include ulcers such as venous ulcer, diabetic foot ulcer, pressure ulcers, ischemic ulcers and infected wounds such as surgical or traumatic wounds. There are some agents that delay the wound healing process including non-steroidal anti-inflammatory drugs (NSAIDs). Delayed wound healing can be life-threatening to patients under steroid therapy.

According to both anecdotal and empirical evidence, many natural products have wound healing

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ORIGINAL ARTICLE

Investigation of the cellular and molecular effects of dehydrozingerone formulation on various days of diabetic wound repair

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Abstract

Cases of diabetes are significantly increasing year by year, attracting the attention of medical professionals and researchers to focus on diabetes and its underlying complications. One among such are diabetic wounds which are difficult to heal, creating severe implications in the day-to-day chores of not only patients, but also family members. Dehydrozingerone (DHZ) is known to possess various effects like anti-inflammatory, anti-microbial, antioxidant, and wound-healing properties. The effect of DHZ on different phases of diabetic wound healing remains untested. Hence, this study was proposed to find out the effect of oral and topical formulation of DHZ on day 5, 10 and 15 of diabetic wound healing. Excisional wounds were created on the dorsal side of animals using punch biopsy to mimic human diabetic wounds. Topical DHZ gel (100 mg in 1 gm of gel) was prepared using 1% Carbopol 934 and was applied twice a day. The treated groups had increased percentage of wound closure; western blotting suggested that DHZ significantly increased ERK and JNK levels and decreased TNF and MMP 2 and 9 levels. From histopathological studies, it was observed that angiogenesis, collagen formation, granulation tissue formation, and fibroblast proliferation were improved on days 5, 10, and 15 of diabetic wound healing. These findings indicate that DHZ (both systemic and topical) are effective during the early phases of wound healing which gets impaired in diabetic wounds. Dehydrozingerone accelerated diabetic wound healing by regulating the various hallmarks of wound healing process.

Keywords Diabetes · Excisional wound model · TNF-α · CD31 angiogenesis · MAPK signaling

Abbreviations

ROS	Reactive oxygen species
DHZ	Dehydrozingerone
IR	Infrared spectroscopy
NMR	Nuclear magnetic resonance
ERK	Extracellular signal-regulated kinase
p-ERK	Phospho extracellular signal-regulated kinase
JNK	c-Jun *N*-terminal kinases
p-JNK	Phospho c-Jun *N*-terminal kinases
AMPK	5' Adenosine monophosphate-activated protein kinase
pAMPK	Phospho 5' adenosine monophosphate-activated protein kinase
VEGF	Vascular endothelial growth factor
MMP-2	Matrix metalloproteinase-2
MMP-9	Matrix metalloproteinase-9
TNF-α	Tumour necrosis factor
SMA	Smooth muscle actin
COL	Collagen
CD31	Cluster of differentiation
H&E	Hematoxylin and eosin staining

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SCIENCE & TECHNOLOGY

Investigation of Peanut oil in Colchicine induced model of Dementia and its comparison with Sesame oil

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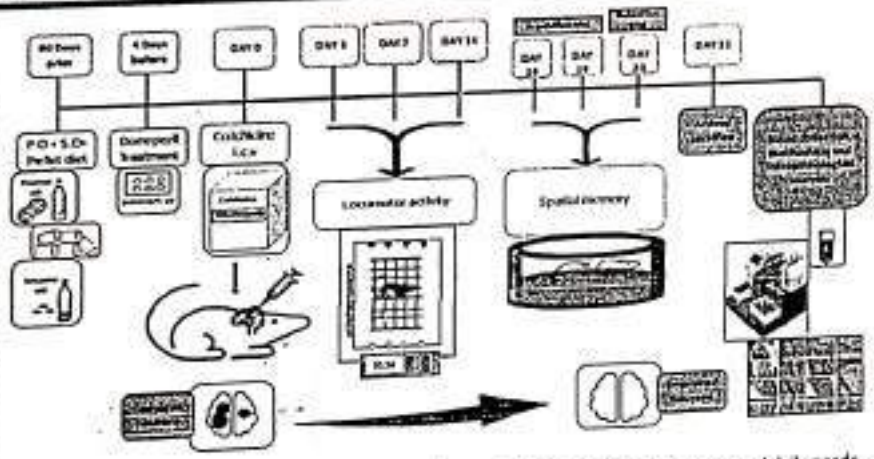
Article

ABSTRACT



Alzheimer's disease (AD) is considered as one of the main reasons for dementia, mainly in geriatric population. Edible oils containing high amount of PUFA provide both energy substrates and integral membrane components that are essential for appropriate neuronal and brain function. Also, edible oils and its constituents like phenol, sterols etc. has rich antioxidant, anti-inflammatory effects playing a key role in the alleviation of the progression of many cardiovascular, central nervous and cancer related diseases. Peanut oil from the seeds of Arachis hypogea has been used for centuries for its medicinal purpose and daily needs. The present study is to evaluate the effect of peanut oil in colchicine induced model of dementia. Post-weaned male and female Wistar rats were fed on diet with peanut oil 100 ml/kg and subjected to intra-cerebroventricular administration of colchicine at dose of 5µl in 5µl of artificial cerebrospinal fluid (ACSF). Donepezil at a dose of 5mg/kg p.o was used as standard. Spatial memory was assessed using Morris water maze. Rats were sacrificed for the isolation of hippocampus and frontal cortex followed by biochemical estimation of acetylcholinesterase (AChE), catalase and superoxide dismutase. Results showed that administration of peanut oil improved spatial memory and significantly reversed the AChE, catalase, and SOD activity. As peanut oil showed improved cholinergic transmission, antioxidant and anti-inflammatory levels in colchicine induced model of dementia, it can be considered as a relevant edible oil in the management of Alzheimer's disease.

Keywords: Donepezil, Frontal cortex, Hippocampus, Acetylcholinesterase, Spatial memory

INTRODUCTION

Alzheimer's disease (AD) is a cataclysmic neurodegenerative ... and is characterized by cognitive dysfunction and behavioural disability, taking place in presenium and senium.[1] According to ... the ailment. With ... of oxidative stress ...

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Research Article

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INVESTIGATING THE ROLE OF SESAMOL IN PROMOTING THE HEALING OF DIABETIC WOUNDS BY ANALYZING MOLECULAR EXPRESSION PATTERNS IN HUMAN DIABETIC DERMAL FIBROBLASTS

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Diabetic wounds, fibroblasts, SRB assay, RT-PCR

ABSTRACT

Background: Sesamol (3,4-methylenedioxyphenol) is one of the plant compounds tested in vivo for diabetic wound healing, normal wound healing, and dexamethasone-induced delayed wound healing. Elucidation of mechanisms underlying the wound healing effect of sesamol through modulation of various molecular and cellular pathways is the crux of this paper. Objectives: The objective of the current work was to uncover the mechanism of sesamol underlying the treatment of diabetic wounds using gene expression analysis. Methods: The cytotoxicity assay was performed using an SRB colorimetric assay, from which two doses were selected for further studies. The expression of various molecular markers was performed using RT-PCR. Results: An SRB assay was carried out to identify the safe concentration of molecules in HDDF cell lines. Two doses that showed more than 80 % viability were selected and used for gene expression analysis. It was observed that sesamol enhanced the expression of VEGF, TGFβ, AKT, JNK, ERK, and TIMP3 significantly ($P \leq 0.001$, $P \leq 0.05$, $P \leq 0.001$, $P \leq 0.0001$) when compared to control and significantly ($P \leq 0.0001$) downregulated the expression of MMP2, MMP9 when compared to control, which promote wound healing in diabetes. The migration studies also showed a significant increase when compared to the control. Conclusion: Sesamol (SM) is a promising molecule that can accelerate wound healing in diabetes by modulating different markers involved in the process.

INTRODUCTION

million people worldwide have diabetes, and that the disease

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Formulation and Evaluation of Herbal Gel Using Acalypha indica Extract for Potential Dermatological Applications

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ABSTRACT

The present research aimed to develop and evaluate an herbal gel formulation utilizing Acalypha indica extract for potential dermatological applications. Acalypha indica, a widely recognized medicinal plant with various pharmacological properties, was chosen for its known anti-inflammatory, antioxidant, and wound healing effects. The gel formulation was developed using suitable gelling agents and evaluated for its physical characteristics, stability, and in vitro skin permeation studies. The herbal gel's efficacy was assessed for its potential use in dermatological conditions such as wound healing, inflammation, and skin rejuvenation.

KEY WORDS:

Acalypha Indica, Herbal Gel, Dermatological Applications, Formulation, Evaluation, Skin permeation.

1. INTRODUCTION:

Acalypha is the fourth largest genus of the Euphorbiaceae family, comprising 450 species. It includes green shrubs, trees, and annuals, primarily found in tropical regions of Africa, America, and Asia [Seebaluck et al., 2015]. Many Acalypha species are utilized for their medicinal properties, serving as remedies for ailments like stomachaches, dyspepsia, venom antidotes, rheumatism, and dermatitis. Additionally, the leaf infusion is utilized for treating stomach issues and body swellings, while the leaf maceration is used for eye infections, and its decoction is ingested in Tanzania to manage epilepsy. The plant holds various biological benefits related to its antioxidant, anti-inflammatory, wound healing, and cytotoxic properties [Ghuman *et al.*,2019]. Indian Copperleaf is a small upright herb, reaching heights of up to 60 cm or more. The ascending branches are angular and velvety hairy. The leaves are broadly ovate, almost triangular, and quite coarsely toothed. Leaf stalks are as long as or longer than the 3-5 cm long blades.

The plants belong to kingdom Plantae, subkingdom Tracheobionta, super division Spermatophyta, division Magnoliophyta, dicotyledons, order Euphorbiales, family Euphorbiaceae [Ojediran *et al.*, 2024]. An ethanolic

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Formulation and Evaluation of Herbal Gel Using Acalypha indica Extract for Potential Dermatological Applications

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ABSTRACT

The present research aimed to develop and evaluate an herbal gel formulation utilizing Acalypha indica extract for potential dermatological applications. Acalypha indica, a widely recognized medicinal plant with various pharmacological properties, was chosen for its known anti-inflammatory, antioxidant, and wound healing effects. The gel formulation was developed using suitable gelling agents and evaluated for its physical characteristics, stability, and in vitro skin permeation studies. The herbal gel's efficacy was assessed for its potential use in dermatological conditions such as wound healing, inflammation, and skin rejuvenation.

KEY WORDS:

Acalypha Indica, Herbal Gel, Dermatological Applications, Formulation, Evaluation, Skin permeation.

1. INTRODUCTION:

Acalypha is the fourth largest genus of the Euphorbiaceae family, comprising 450 species. It includes green shrubs, trees, and annuals, primarily found in tropical regions of Africa, America, and Asia [Seebaluck et al., 2015]. Many Acalypha species are utilized for their medicinal properties, serving as remedies for ailments like stomachaches, dyspepsia, venom antidotes, rheumatism, and dermatitis. Additionally, the leaf infusion is utilized for treating stomach issues and body swellings, while the leaf maceration is used for eye infections, and its decoction is ingested in Tanzania to manage epilepsy. The plant holds various biological benefits related to its antioxidant, anti-inflammatory, wound healing, and cytotoxic properties [Ghuman *et al*.,2019]. Indian Copperleaf is a small upright herb, reaching heights of up to 60 cm or more. The ascending branches are angular and velvety hairy. The leaves are broadly ovate, almost triangular, and quite coarsely toothed. Leaf stalks are as long as or longer than the 3-5 cm long blades.

The plants belong to kingdom Plantae, subkingdom Tracheobionta, super division Spermatophyta, division Magnoliophyta, dicotyledons, order Euphorbiales, family Euphorbiaceae [Ojediran *et al*., 2024]. An ethanolic [illegible] hydrochloride reported in ammo[illegible] [illegible] extract was formulated into a gel

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ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF BUSPIRONE HYDROCHLORIDE IN BULK AND ITS PHARMACEUTICAL FORMULATION BY UV SPECTROMETRY

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ABSTRACT

Simple, accurate, rapid and sensitive method developed for the determination of buspirone hydrochloride in bulk drug and in its tablets by UV Spectroscopy. In mmethod, buspirone hydrochloride estimated at 244 nm using distilled water as a solvent. The linearity was observed in the concentration range of 2-12 µg/ml with correlation co efficient of 0.998. The result of analysis for the method was validated statistically and by recovery studies. Validation was performed according to ICH guidelines for Linearity, accuracy, precision, LOD and LOQ. The proposed method may be suitable for the analysis of Buspirone in tablet formulation for quality control purposes.

KEYWORDS: UV Spectrphotometry, and Validation, Precision, Accuracy, LOQ, LOD, ICH guidelines, Buspirone Hydrochloride.

1. INTRODUCTION

Buspirone hydrochloride is chemically 8[4-[4-{2-pyrimidyl} 1-piperazinyl]butyl]- 8- azospiro (4,5)decane-7,9-dione monohydrochloride Fig. 1, used to treat anxiety. It helps to think more clearly, relax, worry less, to feel less jittery and less irritable and may control symptoms such as trouble sleeping, sweating, and pounding heart beat. It is used in treating hyperactivity in the autistic and may decrease the symptoms of obsessive-compulsive disorder (OCD). Buspirone hydrochloride may help in decreasing the urge for nicotine.[1] Survey of literature reveals that the buspirone hydrochloride reported on stability study and in-vitro- in-

the chemicals used were of analytical reagent grade: (i) Methanol (ii) Acetronitrile (iii) water (iv) Dilutions were prepared by using distilled water. Buspirone (Gift sample by University college of pharmaceutical sciences (kakatiya university, India), Methanol A.R grade were purchased from Qualigens Fine Chemicals, New Delhi. UV-Visible double beam spectrophotometer (UV-1800, Libra, Limited, India) with1cm matched quartz cells, Micropipette of Variable volume 10-1000 µL (Gene Pete Co.) and Digital balance (Samson).

2.1. Methods

Buspirone hydrochloride stock solution was prepared by

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Original Research Article – Pharmaceutical Sciences

DEVELOPMENT AND VALIDATION OF A NOVEL RP-HPLC METHOD FOR THE QUANTITATIVE ANALYSIS OF MOLNUPIRAVIR IN BULK AND TABLET DOSAGE FORMS

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ABSTRACT

A simple, selective, linear, precise, and accurate RP-HPLC method was developed and validated for the rapid assay of Molnupiravir in tablet dosage forms. The method employed isocratic elution at a flow rate of 1.0mL/min using a *Symmetry C18* column (250 × 4.6 mm, 5 µm particle size) at ambient temperature. The mobile phase is composed of ethanol and Phosphate Buffer pH-4 adjusted with Orthophosphoric acid solution in the ratio of 25:75 (v/v), in an isocratic mode. Detection was carried out at a UV wavelength of 235 nm, with a sample injection volume of 20 µL. The retention time for Molnupiravir was recorded at 4.63 minutes. The precision and accuracy of the method were found to be robust, with a percentage relative standard deviation (RSD) of less than 2%. Validation was performed in accordance with ICH guidelines, confirming the method's reliability. This RP-HPLC method is suitable for routine analysis of Molnupiravir in tablet dosage forms, affirming its effectiveness in quality control applications.

Key words:
Molnupiravir, RP-HPLC, Isocratic elution, ICH guidelines, validated method.

INTRODUCTION

A prodrug of the synthetic nucleoside derivative N4-hydroxyl cytidine, molnupiravir [1, 2] works against many viruses by introducing copying during the production of their RNA. It is an antiviral medication that inhibits the Replication of certain RNA viruses. It is used to treat COVID-19 in those infected by SARS-CoV-2 [3, 4]. Molnupiravir is [(2R, 3S, 4R, 5R) chemically]3-(4Z)-4-(hydroxyimino)-3,4-dihydroxy-5-[2,3,4,6-tetrahydropyrimidin-1-yl-2-oxo-1oxolan-2-yl2-methylpropanoate methyl (Figure 1). Molnupiravir has a molecular weight of 329.309 gm/mole and the chemical formula $C_{13}H_{19}N_3O_7$. It is a white, crystalline solid that dissolves easily in methanol, ethanol, and DMSO as well as water [5-7]. Hetero is the manufacturer of MOVFOR 200mg, a brand name under which molnupiravir is sold. A review of the literature [8, 9] on Molnupiravir provides the details fits chemical and physical characteristics as well as a range of analytical techniques used both independently and in conjunction with other Molnupiravir. A literature review [9–11] reveals that specific chromatographic techniques are published for the determination of Molnupiravir, and that RP-HPLC provides a single method for such estimation [12, 13]. Efforts were made to create a straightforward, and accurate, analytical approach for the simultaneous estimate of Molnupiravir and to expand it for their determination in the formulation in light of the necessity for an appropriate RP-HPLC method for the routine analysis of Molnupiravir in formulations.

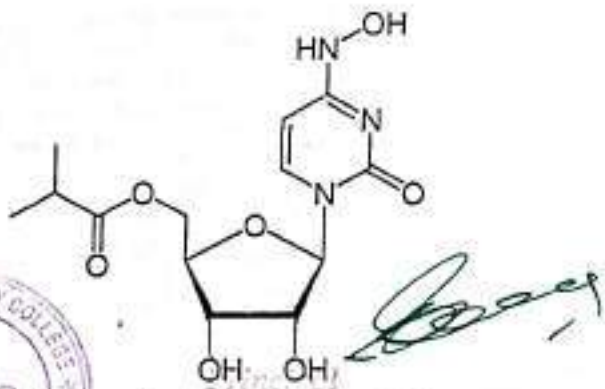

Fig.1. Chemical Structure of Molnupiravir

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UV SPECTROPHOTOMETRIC METHOD FOR ESTIMATION OF FEXOFENADINE IN BULK AND TABLET DOSAGE FORM

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ABSTRACT

A simple and economical Spectrophotometric method has been developed for the estimation of Fexofinadine in bulk form as well as marketed formulations. The present UV method is based on the measurement of absorption at a maximum of 259 nm using 2-propanol as a solvent. The stock solution of Fexofinadine was prepared and subsequent suitable dilution was prepared in 2-propanol to obtain a standard curve. The standard solution of Fexofinadine shows absorption maxima at 259 nm. The estimation of Fexofinadine was done at 259 nm in 2-propanol using a UV-visible double-beam spectrophotometer. In the developed method, linearity over the concentration range of 0.1-1.5 µg/ml of Fexofinadine was observed and was found in agreement with Beer's law. The linear regression was found to be 0.998, and the percentage purity was also determined at 101%, which was within the limit as per the IP. It could be concluded from the results obtained in the present investigation that the method for estimation of Fexofenadine in pure form and in pharmaceutical dosage form is simple, rapid, and economical and can be used successfully in the quality control of pharmaceutical formulations and other routine laboratory analysis.

KEYWORDS: UV Spectrophotometric, Tandard regression, Pharmaceutical dosage, Fexofenadine and Quality control.

1. INTRODUTION

Spectroscopy is the field of study that measures and interprets the electromagnetic spectra that result from the interaction between electromagnetic radiation and matter as a function of the wavelength or frequency of the radiation.[Kroto,1975; Bunker and Jensenet, 2006; Bunker and Jensenet, 2006; Wilsón et al., 1980; Skoog et al., 2007; Herrmann and Onkelinx, 1986], Matter waves and acoustic waves can also be considered forms of radiative energy, and recently gravitational waves have been associated with a spectral signature in the context of the Laser Interferometer Gravitational-Wave Observatory (LIGO).[Bartusiak, 2017].

In simpler terms, spectroscopy is the precise study of color as generalized from visible light to all bands of the electromagnetic spectrum. Historically, spectroscopy originated as the study of the wavelength dependence of the absorption by gas phase matter of visible light dispersed by a prism. Spectroscopy, primarily in the electromagnetic spectrum, is a fundamental exploratory tool in the fields of astronomy, chemistry, materials science, and physics, allowing the composition, physical structure, and electronic structure of matter to be investigated at the atomic, molecular and macro scale, and over astronomical distances. Important applications include biomedical spectroscopy in the areas of tissue analysis and medical imaging. Spectroscopy is a branch of science concerned with the spectra of electromagnetic radiation as a function of its wavelength or frequency measured by spectrographic equipment, and other techniques, to obtain information concerning the structure and properties of matter[Lindberg and Grace, 2002].

Although color is involved in spectroscopy, it is not equated with the color of elements or objects which involve the absorption and reflection of certain electromagnetic waves to give objects a sense of color to our eyes. Rather spectroscopy involves the splitting of light by a prism, diffraction grating, or similar instrument, to give off a particular discrete line pattern called a "spectrum" unique to each different type of element. Most elements are first put into a gaseous phase to allow the spectra to be examined although today other methods can be used on different phases. Each element that is diffracted by a prism-like instrument displays either an absorption spectrum or an emission spectrum depending upon whether the element is being cooled or heated. [Obrien, 2022].

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A BRIEF REVIEW ON MALARIA

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Abstract: Malaria is life threatening and topical disease .It affected equally both males and females irrespective of gender. It is associated with fever with chills mostly they appear within a week or depend on the incubation period of various species .There is a high risk for travellers mostly in sub Africa, Asia, America. An estimated 560,000 deaths and millions of patients affect with illness are seen .This disease is treatable and preventable.

Index Terms - Trophozoites, schizonts, merozoites, gametogony, Hematuria.

I. INTRODUCTION

Malaria: it is an infectious disease caused by infected female anopheles mosquito of genus plasmodium in human via a bite. It introduces the protests via saliva into circulatory system and to liver where they mature and reproduce. It is wide spread in tropical and subtropical region in a broadband around the equator: Africa, Asia and America.

Malaria scientific classification
Domain: Eukaryote
Phylum: Apicomplexan
Family: Plasmodiidae
Genus: plasmodium
Avian Malaria: - It infects birds in tropical region the species which insect the bird are plasmodium anasum and plasmodium gallinaceum [1].

II. EPIDEMIOLOGY:

- 350-500 million people each year diagnosed with malaria
- over 1 million people die per year
- most death occurs in Sub Sahara Africa
- It is equally affected in both males and females
- Malaria was the fourth cause of childhood death in developing countries in 2002
- In Africa , Asia, middle east during July to November at optimumtemperature20 - 30 Fahrenheit(susceptible age : 65% occur in children under 15 year old)susceptible gender: pregnant women (125 million)

Pre disposing factors:-

- Consistent high temperature, warm climate, high humidity
- Stagnant water in which mosquito larvae readily mature providing them environment they need for breathing example: swampy lands, opened dishes, unused swimming pool, Leaky water pipes.
- In dry areas ,outbreak of malaria have predicted with reasonable accuracy by mapping rainfall it is most common in rural areas ,urban agriculture than in cities[2,3].

III. ETIOLOGY:

It is caused by the plasmodium Protozoa which are single cell eukaryotes there are different types of plasmodium. They are

1. Plasmodium falciparum most common cause and it is greatest threat, prevalent species in Africa incubation period is 12 to 14 days. No dormant phase so it does not relapse following the treatment.
2. Plasmodium vivax second most common and greatest threat found in Asia, India and Africa
- The incubation period is 12 to 17 days
- It has dormant liver stage it can relapse months or 2 to 3 years later
3. Plasmodium ovale predominantly independent in west
-The incubation period is 9 to 18 days
- It can relax within 2 to 3 years of onset
4. Plasmodium malariae it is founder throughout Africa, Asia and America
- The incubation period is 18 to 40 days

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Case Report

A Case Report on Arthritis Induced Inflammatory Bowel Disease

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Abstract: IBD is a recurrent inflammation of the gastrointestinal tract caused by an abnormal immune response to gut microbiota. It is a genetically predisposed condition, with incidence rates ranging from 4 to 10 per 100,000 people annually. It is more prevalent in highly industrialized countries and affects the entire bowel wall. Both forms are categorized by their location and degree of involvement. IBD is characterized by diffuse inflammation of the intestinal mucosa, proctitis, and transmural ulceration. Treatment focuses on immunosuppressive drugs and anti-inflammatory compounds, but achieving remission remains a clinical challenge. A 23-year-old female patient with pat history of Arthritis was admitted to the hospital. She complained of weight loss (lost about 5 – 10 kg in the last month), diminished appetite, weakness, blood in her faeces, and abdominal pain. The patient had significant anaemia and a tentative diagnosis of UGI-bleed. She is married, has a son who is nine years old, has regular bowel and bladder habits. The patient's MCHC was 29.4 g/dl, mean MCV was 72.8 fL, and haemoglobin was 11.1%. The patient's colonoscopy revealed Crohn's disease and colitis with rectal sparing. ANA screening tested positive and Negative for RF-IgM. The Patient's medication regimen includes Intravenous dextrose, Vitamin supplementation, Magnesium sulphate, tranexamic acid, Metronidazole, Cefoperazone & Sulbactam, and Pantoprazole. The oral supplementations include Syrup Sucralfate, probiotic capsule, Tab. Hydroxychloroquine, Tab. Tramadol & Acetaminophen, Mesalamine in tablet and sachet usually taken by mixing in water.

Keywords: Anti-nuclear antibodies, Crohn's disease, Modified Schober's test, Mesalamine, Schober's test, Inflammatory Bowel Disease.

1. INTRODUCTION

The hallmark of inflammatory bowel disease (IBD) is recurrent episodes of gastrointestinal tract inflammation brought on by an aberrant immune response to gut microbiota. Two forms of idiopathic intestinal disease that are distinguished from one another by their location and degree of involvement in the intestine wall are combined to form inflammatory bowel disease. Diffuse inflammation of the intestinal mucosa is a symptom of ulcerative colitis (UC). Proctitis, the most common form of ulcerative colitis (UC), can also affect the sigmoid (proctosigmoiditis), the entire colon up to the cecum (pancolitis), or somewhere in between. Transmural ulceration of any part of the gastrointestinal tract (GI) is a result of Crohn's disease (CD), but it most frequently affects the colon and terminal ileum. Both

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Original Article

Prevalence of Depression in Rheumatoid Arthritis Patients in A Rheumatology Centre at Hanamkonda

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ABSTRACT

Background: Rheumatoid arthritis is a chronic illness with an unclear cause that manifests autoimmune inflammatory disorders marked by joint pain, stiffness, and swelling. Depression is a mental illness linked to frequent flare-ups of symptoms, increasing disability, poor quality of life and Prognosis in RA patients. The frequency and prevalence of depression in rheumatoid arthritis patients have risen and in this study analysis of the signs and symptoms using the Hamilton Depression rating scale is expected to support the idea of early identification and treatment can improve patient outcomes. **Materials and Methods:** This study was performed to determine the prevalence of depression in rheumatoid arthritis and to evaluate the inflammatory markers in people with and without depression. Study was carried out at Dr. Naresh Rheumatism and Arthritis centre, hanamkonda for a period of 6 months. Data analysis was done using unpaired t-test with the help of Graph pad prism. **Results:** 550 rheumatoid arthritis patients in total were enrolled over the study duration. Out of 550 individuals, 465 were diagnosed with depression, while 85 were found to be normal. In rheumatoid arthritis, depression prevalence was more in females (86.6%) than males (13.4%). Among total patients 88% of people were non adherent to medication. **Conclusion:** The prevalence of depression in rheumatoid arthritis was higher in women compared to men. Early diagnosis and management of depression in rheumatoid arthritis patients can improve their quality of life. Significantly low medication adherence (88%) in rheumatoid arthritis patients was due to low socioeconomic status and increased age.

Keywords: Hamilton Depression rating scale, Brief Medication Review, Rheumatoid Arthritis, Medication adherence, Depression.

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INTRODUCTION

Rheumatoid Arthritis

RA is an autoimmune and inflammatory disease, which means that immune system attacks healthy cells in your body by mistake; causing inflammation (painful swelling) in the affected parts of the body.[1] Rheumatoid arthritis is characterized by Joint swelling, joint tenderness, and destruction of synovial joints leading to severe disability and premature mortality. RA is a polyarticular autoimmune disease affecting about1% of the adult population.[2]

In RA, the lining of the joint becomes inflamed, causing damage to joint tissue.[3] This tissue damage can cause long-lasting or chronic pain, unsteadiness (lack of balance), and deformity.

Depression

Depressive disorder (also known as depression) is a common mental disorder. It involves a depressed mood or loss of pleasure or interest in activities for long periods of time.[4,5]

Background

Depression is more common in RA than in the general population and has been associated with increased pain, fatigue, reduced health-related quality of life, increased levels of physical disability and increased health care costs.[6] Depressed RA patients have poorer long-term outcomes, including increased pain, more co morbidities and increased mortality levels.[7]

Depression may therefore be a useful target for interventions aimed at improving subjective health and quality of life in RA patients.[8] However, prevalence estimates for depression in RA range between 9.5% and 41.5%, making it difficult to establish the likely impact of depression in this patient group.[9]

Several factors that are related to RA could make this group of patients vulnerable to depression, including continuous pain,

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Postpartum Depression & Its Associated Factors

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ABSTRACT

Postpartum depression (also called PPD) is a dangerous psychological disorder that affects the brain, your actions, and your physical wellness in females. Depression is a regular issue after having childbirth. After childbirth the mother mind may undergo into many changes during and following pregnancy as much as 15 percent of people are impacted. Variety of causes has been identified with thepostpartum depression which includes having history of depression, age at the time of conception or even having triplets and twins has been also among the causes to get postpartum depression. Mothers who are socially distancing themselves from others tend to exhibit extreme mood swings and their ability to bond with the children is also impaired. People who are anxious and living in very much tensed lives has an association the parenting, which impacts the entire family early diagnosis and management is the key role in the treatment of post partum depression. Awareness on the symptoms and risk factors must be made available to all the mothers and Family members.Postpartum depression itself isn't a sign of weakness, being sincere with your partner and family sharing concerns with them is theimportant aspect. ppd can also be self managed by attending social groups and exercising regularly.

Key words: Depression, Childbirth, Newborn, Hormonal Therapy.

INTRODUCTION

Many women are tend to suffering with postpartum depression which is a health condition that follows birth, strong depressive, nervous, and fatigued symptoms that persist for several weeks after giving birth. You may find it hard to care for both yourself and your child as a result of these feelings.

PPD can appear at any point after childbirth. Usually, it starts around three weeks after having birth. To get better, it needs to be managed.A particular kind of prenatal depression is PPD. This type of depression occurs either during or during the first year following childbirth. PPD is the most frequent issue that new mothers face. 1 in 7 women (about 15%) might get affected.PPD does not stem from you. It doesn't define you as a bad mother or person[2].

Epidemology

After giving delivery, 10-20% of women experience postpartum depression (PPD) which comes to an estimated yearly rate of 500,000-750,000 women.Of the 549,585 deliveries that were tracked between 2012 & 2014 11,040 were diagnosed with PPD using the initial case standards, yielding a 2.0% PPD rate[3].164 pregnant women who were referred to Kerman, Iran's government health centres engaged in this prospective cohort research. With the chance of the first type of error being 5% and the second type of error being 20% and the prevalence of postpartum depression in vaginal delivery and caesarean section being 13% and 27%, respectively, the calculated sample size came to 164 pregnant women[4].

Etiology Of Postpartum Depression

PPD is not a result of anything you did wrong. Experts believe there are a variety of causes, some of which may be unique to an individual. The following are some factors that may increase the risk of postpartum depression

A history of depression either before or during conception.
Age at the time of conception (the likelihood increases with age).
Uncertainty regarding the pregnancy.
Offspring (having more increases the likelihood of depression during a subsequent pregnancy).
Mood disorders in the family history.
Going through a really trying time, such as a health catastrophe or job loss.
Having a child with medical issues or special needs.
Having triplets or twins.

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molecules of T3 and T4. T3 and T4 diffuse through the plasma and dietary changes in hypothyroidism

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An International Scholarly Open Access, Peer-reviewed, Refereed Journal

POLYCYSTIC OVARY SYNDROME- A REVIEW

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Abstract: Polycystic ovary syndrome (PCOS) is a widespread reproductive disorder that encompasses many associated health conditions and has an impact on various metabolic processes. Types of PCOS include Insulin resistance PCOS, Inflammatory PCOS, Adrenal PCOS, Post pill PCOS. It has various complications such as Infertility, miscarriage or premature birth, Metabolic syndrome like Hypertension, Dyslipidemia, cardiovascular disease and other includes Type 2 diabetes, sleep apnea, Depression, Anxiety, Abnormal uterine bleeding, Endometrial cancer, Ovarian cancer and breast cancer. There is currently no pharmaceutical treatment for the syndrome, several interventive drugs are utilized to alleviate PCOS's clinical symptoms. Weight and lifestyle (diet, physical activity and behavioural) management are first-line therapy in international evidence-based guidelines for PCOS.

Index Terms **- Infertility, Insulin resistance, Menstrual dysfunction, Hormonal dysregulation.**

INTRODUCTION

The Polycystic ovary syndrome (PCOS) is the commonest endocrine disorder in reproductive-aged women [1]. This syndrome is heterogeneous by nature and is characterized by a combination of signs and symptoms of androgen excess and ovarian dysfunction [2]. A majority of women with PCOS have an above-average or high BMI, insulin resistance (IR), menstrual symptoms, and the typical male pattern of baldness, acne, and hirsutism [3].

PCOS affects an estimated 8–13% of reproductive-aged women. Up to 70% of affected women remain undiagnosed or have long delays before the condition is recognized[2].The etiology of PCOS remains unclear; however, most studies suggested that PCOS is an X-linked dominant condition[3].But factors like insulin resistance, hormonal imbalances, genetic factors, obesity, stress and other environmental factors are known to cause PCOS[4]. Polycystic ovary syndrome is recognized as a metabolic disorder, with long term health risks, including hypertension, type 2 diabetes, dyslipidaemia, insulin resistance, and obesity[5].

Stein and Leventhal (Chicago, IL, USA) studied the causes underlying female sterility in the mid-1900s. Stein and Leventhal said that women, who were sterile, which was the same as infertile, had thick body hair and irregular menstrual periods. The 1958 article "The Stein-Leventhal Syndrome: A Curable Form of Sterility" by Irving Freiler Stein Sr. discussed his research on the diagnosis and surgical treatment of Stein-Leventhal syndrome. Women's reproductive health is impacted by Stein-Leventhal syndrome, also referred to as polycystic ovarian syndrome (PCOS). Infertility, an absent menstrual period (amenorrhea), and excessive body hair are all typical signs of PCOS [6].

Over ten follicles are visible on ultrasonography in the ovaries of PCOS patients. It has been suggested that insulin resistance, a potential propensity toward hyperandrogenism, and altered luteinizing hormone (LH) action are factors in the pathophysiology of PCOS [7].

Epidemiology:

The global prevalence of PCOS ranges from 6% to 21%, related to different diagnostic criteria, ethnicities, and regions. There were 1.55 million new instances of PCOS in women of reproductive age worldwide in 2017, and 17.23% of these cases were between the ages of 21–30.In Asia, the age-standardized incidences of PCOS have significantly increased during the last 30 years. PCOS is associated with high risk of metabolic disturbances. Almost 50% of PCOS patients have obesity, 31.1% have impaired glucose tolerance, and 7.5% have type 2 diabetes (T2DM). Compared with non-obese PCOS patients, obese PCOS patients had a higher prevalence of metabolic syndrome (15.9% vs. 47.9%) and insulin resistance (7.1% vs. 27.8%). Under the subgroup analysis, Asian women with PCOS are more vulnerable to metabolic disturbances than other races, with a 5.2-fold increased risk of IGT and a 4.4-fold increased risk of T2DM compared with healthy women.

In summary, PCOS has become more commonplace worldwide over time. Due to the increased likelihood of concurrent metabolic problems, PCOS women's long-term health may be significantly impacted [8].

Types of PCOS:

Insulin resistance PCOS, Inflammatory PCOS, Adrenal PCOS, Post pill PCOS

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molecules of T3 and T4. T3 and T4 diffuse through the plasma and dietary changes in hypothyroidism

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Pharmacy Practice

A Case Report on Wilson's Disease

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Abstract Case Report

The accumulation of copper in the liver, brain, cornea, and kidneys is the hallmark of Wilson's disease, an uncommon autosomal recessive condition. There is no community-based research on the prevalence and incidence of Wilson's disease in India; this study is hospital-based. Overview of the Case: A 10-year-old girl with serious complaints of burning micturition, giddiness, loose stools and blood in stools, yellowish discolouration of skin and sclera, generalized body aches, fever and stomach pain with distension was brought to the paediatric department. Wilson's illness was established by abdominal USG using the increased levels of urine copper, whole blood picture, liver function tests, and serum electrolytes and decreased levels of ceruloplasmin. The prominent characteristic, which is less common in youngsters, is the Kayser Fleisher ring. It is identified by a discoloration of the corneal edge that is greenish-brown in colour and eventually goes away with treatment. Probiotics, an antibiotic, a hepatoprotective drug, and copper chelators (D-penicillamine and zinc) were used in her treatment. Gradually she showed improvement in clinical signs and LFT levels.

Keywords: Copper, Ceruloplasmin, Ferritin, Iron, Slit Lamp.

INTRODUCTION

Wilson's illness is an uncommon autosomal recessive copper metabolism disorder that is brought on by a chromosome 13 mutation in the ATP7B gene, which leads to an excess of copper in the body. This condition, where copper deposits in the brain, liver, kidney, eyes, and other organs, is also referred to as hepatolenticular degeneration (hepato-liver, lenticular-brain). Ceruloplasmin, or the P-type adenosine triphosphate family of copper transporter protein, is encoded by the ATP7B gene.

Wilson's illness is caused by a mutation in this gene that impairs ceruloplasmin synthesis. An important component of several metabolic enzymes is copper. Average daily intake of copper is 2–5 mg, with a normal estimated total body copper of 50–100 mg. The body contains a typical quantity of copper at birth. After then, it rises gradually. Usually, the symptoms start between the ages of five and forty-five years. Hepatic symptoms began as acute hepatitis and could develop into fulminant liver failure, which is characterized by digital clubbing, ascites, spider nevi, and palmar erythema. Neural injury results in dystonia, tremor, choreoathetosis, and dementia

The prominent characteristic, which is less common in youngsters, is the Kayser Fleisher ring. It is identified by a discoloration of the corneal edge that is greenish-brown in colour and eventually goes away with treatment (Sriram Shanmugam *et al.*, 2018). Hepatic copper values greater than 250 micrograms per gram of dry weight (normal 20–50) are characteristic of WD (Peter Ferenci *et al.*, 2005). The American Association for the Study of Liver Diseases recommends that first-degree relatives of patients who are newly diagnosed with WD should be screened for the disease. Screening should include genetic testing if available. Other options for screening are basic history and physical examinations, with particular attention to information regarding a history of liver disease, neurologic and psychiatric symptoms, and evaluation for Kayser-Fleischer rings (Schilsky *et al.*, 2022). Patient education regarding dietary modifications, such as avoidance of hepatotoxic medications, alcohol, and diet rich in copper including mushrooms, chocolate, nuts, dried fruits, liver, and shellfish, should be emphasized (Kannauje P K *et al.*, 2021).

CASE PRESENTATION

A 10-year-old girl was brought to the paediatric department with several serious complai

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formed when two ionizations occur (12). molecule or two T2 molecules combine to generate T4. TGB is broken down by digestive enzymes in the lysosomes, which release molecules of T3 and T4. T3 and T4 diffuse through the plasma

Need for the study: The study is to assess mental illness, knowledge, and dietary changes in hypothyroidism and hyperthyroidism patients

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IJMSCR

Viral Hepatitis – A Review Article

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Conflicts of Interest: Nil

Abstract

Hepatitis is inflammation of the liver that can result from a variety of causes such as alcohol overconsumption, autoimmune, medications, or toxins.Hepatitis can be further classified into acute and chronic. If inflammation of the liver lasting for less than 6 months, is termed as acute hepatitis and greater than 6 months is termed as chronic hepatitis.Hepatitis is a significant public health issue in developing countries, having varying morbidity and mortality rates.Hepatitis A and E infections are typically self – limiting and do not result in chronic liver disease, but can cause significant morbidity and mortality in people with underlying liver disease. Hepatitis B is a major global health issue, about 257 million people are living with chronic hepatitis B infection. Hepatitis D is relatively rare and usually infect people who are already infected with hepatitis B. Clinical pharmacist can play a major role in reducing the spread of infection by properly educating the patient about spread of disease and hygiene.

Keywords: Hepatitis, Liver, Morbidity, Mortality, Clinical Pharmacist

Introduction

Viral hepatitis has been a redoubtable challenge, with proved outbreaks 5000 years ago in China and analogous jaundice descriptions by Hippocrates in the 5th century BC in the Island of Thassos[1]. Hepatitis is inflammation of the liver that can result from a variety of causes such as alcohol overconsumption, autoimmune, medications, or toxins. Viral infection is the most frequent cause of hepatitis. Hepatitis A,B and C are most common types of hepatitis whereas hepatitis D and hepatitis E are less commonly encountered[2].Hepatitis B and D are the most chronic types of Hepatitis and leads to Liver cirrhosis and Liver Cancer, and are responsible for a significant number of deaths each year.The severity of hepatitis can range from mild and self-limiting to severe illness requiring liver transplantation based on causative factor, the duration of the inflammation, Hepatitis can be further classified into acute and chronic[3].If inflammation of the liver lasting for less than 6 months, is termed as acute hepatitis and greater than 6 months is termed as chronic hepatitis. Acute hepatitis is usually self-resolving but it can cause fulminant liver failure based on the etiology. Whereas, chronic hepatitis can cause liver damage that includes hepatocellular carcinoma,liver fibrosis, cirrhosis, and features of portal hypertension leading to significant morbidity and mortality[4].

Epidemiology

Millions of people Worldwide are getting affected by Hepatitis and it is a global health issue.Hepatitis is a significant public health issue in developing countries, having varying morbidity and mortality

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formed when two ionizations occur (12). Either one T1 and one T2 molecule or two T2 molecules combine to generate T4. TGB is broken down by digestive enzymes in the lysosomes, which release molecules of T3 and T4. T3 and T4 diffuse through the plasma

psychosis [12].

Need for the study: The study is to assess mental illness, knowledge, and dietary changes in hypothyroidism and hyperthyroidism patients

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Mallory-Weiss Syndrome: A Case Report

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Type of Publication: Case Report
Conflicts of Interest: Nil

Abstract

Mallory Weiss Syndrome (MWS) manifests as a tear in the mucous membrane or inner lining of esophagus-to-stomach junction. Most tears recover naturally in 7–10 days, although MWS might result in considerable bleeding. Severe or protracted vomiting is the most typical cause of MWS. While this kind of vomiting can also be brought on by stomach ailments, it also happens in prolonged alcoholism or blumia. In the majority of cases, the symptoms will manifest as bloody or black stools, hematemesis, involuntary retching, and stomach pain. The red blood cell count may be low as a result of esophageal bleeding if symptoms point to active bleeding, which the doctor would diagnose with an esophagogastroduodenoscopy (EGD).The National Organisation for Rare Disorders estimates that in roughly 80–90% of MWS cases, the bleeding caused by esophageal tears will stop on its own. If bleeding persists, coagulation therapy and sclerotherapy are the preferred treatments. Famotidine and lansoprazole are used to lessen the production of stomach acid.

Keywords: Mallory weiss syndrome, coagulation therapy, sclerotherapy, Famotidine, lansoprazole

Introduction

One of the frequent causes of acute upper gastrointestinal bleeding is Mallory-Weiss syndrome, which is characterized by longitudinal superficial mucosal lacerations (Mallory-Weiss tears). These tears primarily affect the gastroesophageal junction, although they can also spread distally to affect the stomach's proximal part or lower to middle esophagus.

• Although Kenneth Mallory and Soma Weiss more accurately described this condition as lower esophageal lacerations (not ulcerations) happening to patients with repetitive forceful retching and vomiting after excessive alcohol intake in 1929, Albers first described lower esophageal ulceration in 1833.

• Severe or protracted vomiting is the most typical cause of MWS. This kind of vomiting can [illegible] when one has a gastrointestinal sickness, but it also happens regularly as a result of bulimia or prolonged alcohol consumption.

• In mild circumstances, the illness can not show any symptoms.

• Hematemesis is the first symptom to appear in 85% of cases.

• Melena, lightheadedness, or syncope are additional symptoms that may appear in cases of significant bleeding. The existence of a predisposing gastroesophageal reflux disease (GERD), which is indicated by presence of epigastric pain.

Risk Factors: Heavy alcohol consumption, Bulimia nervosa diagnosis, chronic acid reflux and extreme vomiting.

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produced when one [illegible] formed when two ionizations occur (T2). Either one T1 and one T2 molecule or two T2 molecules combine to generate T4. TGB is broken down by digestive enzymes in the lysosomes, which release molecules of T3 and T4. T3 and T4 diffuse through the plasma [illegible] and subsequently into the circulation.

psychosis [12].

Need for the study: The study is to assess mental illness, knowledge, and dietary changes in hypothyroidism and hyperthyroidism patients

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A PROSPECTIVE OBSERVATIONAL STUDY ON ETIOLOGY, RISK FACTORS, CONSEQUENCES AND TREATMENT PATTERNS IN PRETERM BIRTH

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ABSTRACT

Background: Birth before 37 weeks of gestation is preterm birth. Preterm birth consequences are the leading causes of death among children less than 5 years. Preventing preterm birth remains a challenge as it is multifactorial, in most cases the cause is unknown and varies in different women. **Aims:** This study was performed to assess the causes, risk factors for preterm delivery and consequences, treatment patterns of premature babies with respect to maternal age. **Materials and Methods:** An observational study was carried out for 6 months in gynecology department at government maternity hospital, hanamkonda. The data was collected in a specially designed data collection forms, which contains patient demographic details, 17 factors that are known to have an impact on preterm delivery, baby consequences and treatment. **Results:** During the study period, data was collected from 403 patient's, majority of preterm delivery aros during 32-37 weeks of gestational age. From our observation the prime caus oligohydramnios (26.79%), utmost risk factors are low SES i.e., low income, rural (67.99 Major complications a premature baby face is RDS (50.14%), LBW (49.87%) and significant treatment given to a premature baby is oxygen therapy (53.34%), incubation (47.64%), phototherapy (13.64%), antibiotics (24.56%) and blood transfusions (6.69%). **Conclusion:** By early detection of physical, mental, and social problems of a pregnant woman and providing required preventive treatment, counselling during pre can decrease preterm deliveries. Bring awareness on long- and short-term consequences a premature baby can face.

produced when one iodine atom is oxidized, formed when two ionizations occur (T2). Either one T1 and one T2 molecule or two T2 molecules combine to generate T4. TGB is broken down by digestive enzymes in the lysosomes, which release molecules of T3 and T4. T3 and T4 diffuse through the plasma and interstitial fluid and subsequently into the circulation

psychosis [12].

Need for the study: The study is to assess mental illness, knowledge, and dietary changes in hypothyroidism and hyperthyroidism patients

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RESEARCH ARTICLE OPEN ACCESS

DEPRESSION AND ANXIETY DISORDERS IN THYROID PATIENTS

Gunisetti Tejaswini, Muta Apoorva, Thokala Manisha, Namilikonda Rachana, Ravi Chander Thatipelli and Tejaswi Chillara*

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Thyroid, Anxiety, Depression, Hamilton scale.

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ABSTRACT

This study was done to assess medication adherence, awareness in thyroid patients and to evaluate the depression and anxiety in thyroid patients using depression and anxiety scales. A randomised observational study was conducted, in the primary health care centres and through direct visits to homes in Hanamkonda for a period of 6 months. In the overall study we collected 406 thyroid patients' data in this 305 were hypothyroidism and 101 were hyperthyroidism. The total data was analysed using the scoring system to find out the ranges. From our study we concluded that thyroid conditions would affect the mental health condition of the person.

Citation: Gunisetti Tejaswini, Muta Apoorva, Thokala Manisha, Namilikonda Rachana, Ravi Chander Thatipelli and Tejaswi Chillara. 2023. "Depression and anxiety disorders in thyroid patients". *International Journal of Development Research*, 13, (11), 64152-64156.

INTRODUCTION

The thyroid is a butterfly-shaped gland, is situated immediately below the larynx. It produces hormones that regulate the body's energy consumption. These hormones have an impact on every organ in our body and regulates a number of the most vital processes.

Secretion: Thyroid hormone synthesis and release are stimulated by thyroid-stimulating hormone (TSH) from the anterior pituitary and thyrotropin-releasing hormone (TRH) from the hypothalamus [12].

Functions: Increase baseline metabolic rate, promote protein synthesis, improve excretion of cholesterol, hasten the growth of the body, and promote nervous system development.

Synthesis: Thyroid follicular cells actively move iodide ions (I-) from the circulation into the cytosol. Thyroglobulin (TGB), a large glycoprotein made by the follicular cells involving in capturing (I-). TGB will undergo iodization I- → I2. Mono- iodotyrosine (T1) is produced when one iodine atom is bounded, and diiodotyrosine is formed when two ionizations occur (T2). Either one T1 and one T2 molecule or two T2 molecules combine to generate T4. TGB is broken down by digestive enzymes in the lysosomes, which release molecules of T3 and T4. T3 and T4 diffuse through the plasma [illegible] interstitial fluid and subsequently into the circulation.

Although T4 is often secreted in greater amounts than T3, T3 has a far higher potency. Additionally, the majority of the T4 that enters a body cell is converted to T3 by removing one iodine.

Types of thyroid disorder: Hypothyroidism, Hyperthyroidism.

Hypothyroidism: Insufficient thyroxine (T4) production or secretion by the thyroid gland results in hypothyroidism.

Hyperthyroidism: increased thyroid hormone synthesis, excessive release of thyroid hormones, an abnormal concentration of thyroid hormones in the tissues, known as hyperthyroidism [8].

Thyroid hormone metabolism in the brain: Thyroid function issues can have a major impact on mental status, including emotion and cognition. Both too much and too enough thyroid hormones can lead to mood disorders, including depression, which is typically curable with effective thyroid medication.

Psychiatric manifestations of thyroid disorders: The neuropsychiatric symptoms of primary thyroid diseases, such as hypothyroidism and hyperthyroidism, can range from mild anxiety and depressive [illegible] psychosis [12].

Need for the study: The study is to assess mental illness, knowledge, and dietary changes in hypothyroidism and hyperthyroidism patients

ORIGINAL RESEARCH PAPER

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EVALUATION OF STRESS AND ITS IMPACT ON MENTAL HEALTH IN WORK FROM HOME EMPLOYERS

Clinical Science

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ABSTRACT

Background: Stress is the feeling of being overwhelmed or unable to cope with mental or emotional pressure. Nowadays, stress has become a major problem and can be seen in most of the people including young children. If stress persists for a longer time, it affects the body in several ways as the body is unable to cope with it. Stress affects both physical as well as mental health. The impact of stress is different in individuals. Stress is associated with diabetes, hypertension, suppression of the immune system, cardiovascular diseases, and neurological disorders. *Aims:* The study is aimed to evaluate Stress in 'Work from Home' individuals which impacts mental health leading to further health complications. *Materials And Methods:* In this Randomized Prospective Observational study that was conducted online for six months, all the relevant data was collected using an online questionnaire form which includes patient demographic details, Perceived Stress Scale, Diabetes Distress Scale and Diabetes Risk Assessment scale. *Results:* During the study period we collected a total of 501 responses. Among 501, 63(12.6%) were having low stress, 372(74.3%) were having moderate stress and 66(13.1%) were having high stress. 16 employees were diabetic in which their diabetic distress is moderate. In 486 employees, diabetic risk was assessed in which 182(37%) were having slightly elevated risk, 33(7%) were having moderate risk, and 31(6%) were having high risk. *Conclusion:* Moderate stress is seen in the majority of the study population. The possibility of having Stress is high in individuals with no physical activity. Diabetes risk is seen in 45% of the study population. As the percentage of family history increases diabetes risk is increased which supports genetic predisposition to diabetes mellitus.

KEYWORDS

Stress, Physical activity, Diabetes, Work from home.

INTRODUCTION

Stress is the feeling of being overwhelmed or unable to cope with mental or emotional pressure. The word stress is coined by Hans Selye in 1936 and he defined it as the non-specific response of the body to any demand for change, it may be caused by, or results in pleasant or unpleasant conditions. Nowadays, stress has become a major problem and can be seen in most people, including young children. Both nervous and endocrine systems are involved in the stress response. Most of the body systems are affected by stress.

Generally, stress is assumed as a situation or a condition during an adverse event or state but in fact, it is a way by which the body overcomes an undesirable or demanding situation. Whenever we are exposed to unfavorable conditions (physical or mental), our body tries to maintain homeostasis by adapting to some changes and protecting itself [1]. Stress is reflexed to emotional and physical demands. Whenever the demands of the situation exceed all our available recourse, we feel stressed.

Stress responseOur body elicits a response whenever it is exposed to a stressor, it may be real or imagined. The response elicited in all individuals is not always uniform. Along with the duration and intensity of the stressor, other factors like age, gender, mental and physicalhealth, personality, and past experiences influence the stress response.Hans Selye developed General Adoption Syndrome (GAS). The 3 stages in stress response are

1. Alarm
2. Adaption
3. Exhaustion or Recovery.

The first stage is the Alarm which involves the fight or flight response. It enables us to deal with difficult situations. Various reactions in the body occur at this stage which involves the release of stress hormones: cortisol, adrenaline, noradrenaline, increased heart rate, increased blood sugar level, and rise in blood pressure.

Then comes the Adaption stage in which the body uses all its resources when the stressful situation isn't resolved to cope or adapt to it. This results in the occurrence of various types of physical (sleep problems, muscular pains, tiredness, indigestion, allergies), emotional (impatience, and irritability), mental (lack of concentration) and behavioral problems (smoking, drinking).

The third stage is the Exhaustion stage or Recovery stage. If the body's mechanism succeeds in overcoming the effect of the stressors it results in the recovery stage. On contrary, if it fails to maintain hormonal function it leads to the exhaustion stage. Long-term effects are seen in individuals when the exhaustion stage persists for a longer duration which further leads to CAD, depression, and hypertension.

Work Related Stress:

Currently, work-related stress is one of the biggest challenges. Work-related stress is strongly related to physical symptoms such as back pain, headache, or sleep disturbances. Imagine a situation, where your boss has emailed you about an unfinished assignment, your body and mind instantly respond by activating fight or flight response, your heart beats faster, your breathing quickens and muscle tension, and then to manage yourself from getting fired you work late into the night to complete the task and when these types of situations become frequent you will develop overwhelming exhaustion, cynicism and a sense of inefficacy. Thus, long-term exposure to work-related stressors like these can affect mental health, and one may experience major depressive disorder and generalized anxiety disorder. High levels of stress at work and outside of it can affect physical health too. Repeated activation of the fight-or-flight response can increase susceptibility to disease. For example, repeated activation of the stress hormone cortisol can disturb the immune system and raises the chances of developing cardiovascular diseases, and autoimmune disorders. Work stress can also harm companies or organizations. To cope with work stress individuals must adopt stress management skills.

MATERIALS AND METHODS

Study Site: Multicentered Online Survey

Study Type: Randomized prospective observational study

Study Period: Six months

Study Criteria

Inclusion Criteria:

Study criteria included the people who are working from home, people who are willing to participate in the study, both male and females.

Exclusion Criteria:

People who were not willing to participate in this study and those who are working from the office.

challenges with communication and social years have suggested that the number of instances of

Section: Paediatrics & Neuro

IJMEDPH JOURNAL

Original Research Article

CLINICAL PROFILE IN AUTISTIC CHILDREN

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ABSTRACT

Background: Autism spectrum disorder (ASD) is a complex development condition involving persistent challenges with social communication, restricted interest, and repetitive behaviour. This study was conducted to assess the various clinical profiles of autistic children and the severity of the disease using the Indian Standard Assessment for Autism (ISAA) scale.

Materials and Methods: This is a cross-sectional observation study conducted at Department of paediatrics and neuro centre Telangana, India., over 6 months. 101 children diagnosed with autism spectrum disorder were assessed with detailed birth, developmental history, behavioural issues, screen time, and physical examination.

Results: Among the total subjects, 88(87.1%) of children (56 - complete & 32 - partial) are experiencing a Lack of social smile, 77(76.2%) of children are experiencing a Lack of joint attention, and all subjects are having a Lack of eye contact in which 39% of children are completely lacking it while 61% of are partially lacking eye contact. 63% of children (60% - complete & 3% - partial) are not responding to their names, 50(49.5%) of children are failed to use gestures, 71(70.2%) of children had no proper/meaningful speech, 44(43.5%) of children are not obeying verbal commands while 57(56.4%) of children are obeying them and in 62(61.3%) of children motor stereotypes are present, 62(61.3%) of children had unusual play habits, 60(59.4%) of children are experiencing lack of imaginative play, in 18(17.8%) children there is a presence of self-injurious behaviour. In 19(18.8%) of children, there is a history of epilepsy, 50(49.5%) of children are experiencing echolalia, 50(49.5%) of children there are sleep issues and 54(53.4%) of children had a lack of fear of danger. 86(85.1%) of children are experiencing restlessness and 45(44.5%) of children insisted on sameness.

Conclusion: Autistic children presented with varying clinical features. There is a need for increased awareness about ASD to facilitate early diagnosis and intervention. In the current study most ASD patients are male and with majority of the symptoms and screen addiction and most of the patients are in mild to moderate conditions. Early recognition of symptoms would help in appropriate therapeutic intervention resulting in favourable outcome.

Keywords: Autism, Screen watch, ISAA, Speech delay.

INTRODUCTION

An early-onset neurodevelopmental syndrome with a hereditary component is autism spectrum disorder (ASD). The range of its clinical presentations is immense. The Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM5),[1] states that stereotyped behaviors, limited interests, and ongoing challenges with communication and social relationships are the hallmarks of ASD. It is estimated that 62 out of every 10,000 children have ASD.[2] Etiologic heterogeneity is evident in ASDs, and neither a definite medical diagnostic nor a cure exists for these illnesses.[3] Global studies show that the number of youngsters receiving an autism diagnosis is higher than it has ever been. Studies conducted all around the world in the last ten or so years have suggested that the number of instances of

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Viral Hepatitis – A Review Article

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Abstract

Hepatitis is inflammation of the liver that can result from a variety of causes such as alcohol overconsumption, autoimmune, medications, or toxins.Hepatitis can be further classified into acute and chronic. If inflammation of the liver lasting for less than 6 months, is termed as acute hepatitis and greater than 6 months is termed as chronic hepatitis.Hepatitis is a significant public health issue in developing countries, having varying morbidity and mortality rates.Hepatitis A and E infections are typically self – limiting and do not result in chronic liver disease, but can cause significant morbidity and mortality in people with underlying liver disease. Hepatitis B is a major global health issue, about 257 million people are living with chronic hepatitis B infection. Hepatitis D is relatively rare and usually infect people who are already infected with hepatitis B. Clinical pharmacist can play a major role in reducing the spread of infection by properly educating the patient about spread of disease and hygiene.

Keywords: Hepatitis, Liver, Morbidity, Mortality, Clinical Pharmacist

Introduction

Viral hepatitis has been a redoubtable challenge, with proved outbreaks 5000 years ago in China and analogous jaundice descriptions by Hippocrates in the 5th century BC in the Island of Thassos[1]. Hepatitis is inflammation of the liver that can result from a variety of causes such as alcohol overconsumption, autoimmune, medications, or toxins. Viral infection is the most frequent cause of hepatitis. Hepatitis A,B and C are most common types of hepatitis whereas hepatitis D and hepatitis E are less commonly encountered[2].Hepatitis B and D are the most chronic types of Hepatitis and leads to Liver cirrhosis and Liver Cancer, and are responsible for a significant number of deaths each year.The severity of hepatitis can range from mild and self-limiting to severe illness requiring liver transplantation based on causative factor. Based on the duration of the inflammation, Hepatitis can be further classified into acute and chronic[3].If inflammation of the liver lasting for less than 6 months, is termed as acute hepatitis and greater than 6 months is termed as chronic hepatitis. Acute hepatitis is usually self-resolving but it can cause fulminant liver failure based on the etiology. Whereas, chronic hepatitis can cause liver damage that includes hepatocellular carcinoma,liver fibrosis, cirrhosis, and features of portal hypertension leading to significant morbidity and mortality[4].

Epidemiology

Millions of people worldwide are getting affected by Hepatitis and it is a global health issue.Hepatitis is a significant public health issue in developing countries, having varying morbidity and mortality

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CHOLELITHIASIS- A REVIEW

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Abstract: Cholelithiasis, or gallstone disease, is the presence of gallstones in the biliary tract. More specifically, cholecystolithiasis describes gallstones present in the gall bladder and can lead to cholecystitis, whereas choledocholithiasis describes gallstones present in the common bile duct and can lead to ascending cholangitis. It is more prevalent in developed countries, particularly among individuals of western descent, and its incidence increases with age. Women are more susceptible to gallstone formation compared to men, with hormonal factors playing a significant role. The clinical presentation often depends on the location and size of the gallstones and whether they cause any obstruction or inflammation in the biliary system. Management of gallstones can be divided into two categories asymptomatic gallstones and symptomatic gallstones. Preventing gallstone formation and associated complications is possible through various lifestyle modifications and risk factor management.

IndexTerms - Gallstones, Biliary Colic, Cholecystectomy, Inflammation.

I. INTRODUCTION

Cholelithiasis, commonly known as gallstone disease, is a medical condition that affects millions of individuals worldwide. It is a prevalent and clinically significant gastrointestinal disorder, refers to the formation of solid crystalline deposits, known as gallstones, within the gallbladder or bile ducts. These stones formed are mainly composed of two substances: cholesterol and calcium bilirubinate. This condition has substantial implications for public health due to its association with various complications, including biliary colic, acute cholecystitis, and choledocholithiasis. Choledocholithiasis develops in about 15% of patients with cholelithiasis occurs due to the migration of stones from the gall bladder into the bile ducts[1].Understanding the pathogenesis, risk factors, diagnostic modalities, and evolving management strategies for cholelithiasis is imperative for clinicians and researchers alike.

Gallstones, also referred to as cholelith, are solid deposits that can vary in size and composition. They are predominantly composed of cholesterol, bilirubin, and calcium salts, although the exact composition may differ among individuals. Gallstones can form in various parts of the biliary system, including the gallbladder, common bile duct, and hepatic ducts. The presence of these stones can lead to a wide spectrum of clinical manifestations, ranging from asymptomatic gallstones to acute cholecystitis, obstructive jaundice, and pancreatitis. In patients with asymptomatic gall stones discovered incidentally, the likelihood of developing symptoms or complications is 1 to 2% per year [2].

II. EPIDEMIOLOGY:

Cholelithiasis is a common gastrointestinal disorder, and its prevalence varies across different populations and regions with an overall prevalence rate of 2 – 29%[3]. It is more prevalent in developed countries, particularly among individuals of western descent, and its incidence increases with age. Women are more susceptible to gallstone formation compared to men, with hormonal factors playing a significant role. Prevalence is low in Asian population with a female to male ratio of 3:1[4]. The prevalence of gallstones also tends to increase during pregnancy and with certain medical conditions such as obesity and metabolic syndrome. Some epidemiological studies using ultrasound examination have determined the factors favouring lithogenesis in addition to which are already well known such as age, obesity, female gender, high blood triglyceride levels and multiparity, the risk is correlated with high frequent variations in weight, intake of certain drugs and with their [illegible] lifestyle habits[5]. Gallbladder disease is generally considered uncommon in childhood, but the frequency seems to be increasing [illegible] years [6].

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A Prospective Observational Study on Causes and Effectiveness of Oligohydramnios Treatment in Pregnant Women with Different Comorbidities

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Oligohydramnios is a rare condition characterised by decreased amniotic fluid volume for gestational age. To determine the causes and effectiveness of oligohydramnios treatment in oligohydramnios pregnant women. We conducted a prospective and observational study at GMH (Government Maternity Hospital) in Hanamkonda over a period of 6 months. We included 203 oligo patients in this study and in which patients were grouped as 3 categories based on amniotic fluid index (AFI) as mild, moderate, severe. Information of the patients were collected from patient case reports and face to face interactions. The data was analysed through EXCEL. From our study we

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Medication Adherence in Renal Patients

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

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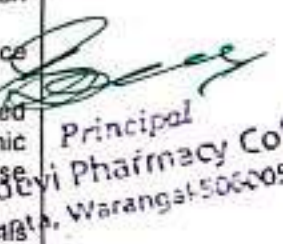
ABSTRACT

Background: Medication adherence is defined as extent of patients taking medications as prescribed by doctors. It is the major factor that determines the therapeutic outcomes in the patient. Non adherence is quite common problem in most of the patients which is dangerous and can increase treatment expenses.
Aims: The study was conducted to evaluate and identify various reasons leading to non-adherence which can result in unpleasant consequences in the renal patients.
Materials and Methods: The study was a prospective observational study that was performed through a questionnaire for 6 months. The data collected includes renal patient's demographic details, past history, complaints, medications and interviewed them regarding their medications use by using morisky adherence questionnaire.
Results: The study was performed on 300 renal patients in the nephrology department. From this data around 31(10%) of the patients were completely adherent and 269(90%) of the patients were non-adherent to the medications. 66(24%) were non-adherent due to forgetfulness about medications, 49(18.2%) were non-adherent because of very frequent changes made in the drug regimen, 63(23.4%) of the patients were non-adherent because of expensive medicines.



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RES MILITARIS Social Science Journal

DEVELOPMENT AND COMPARATIVE EVALUATION OF FUROSEMIDE ORAL DISPERSIBLE FILMS INCORPORATING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS

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ABSTRACT:
The development of oral dispersible films (ODFs) for the delivery of furosemide, a commonly used diuretic, offers an effective and convenient alternative to traditional oral dosage forms. The aim of this study was to formulate and evaluate furosemide oral dispersible films incorporating both natural and synthetic superdisintegrants to enhance the disintegration and dissolution rate of the drug. Natural superdisintegrants such as gellan gum and xanthan gum, and synthetic superdisintegrants like croscarmellose sodium and sodium starch glycolate, were incorporated into the formulations and their effects on the film characteristics were systematically compared.

The films were prepared using the solvent casting method, and their physical properties such as thickness, tensile strength, disintegration time, dissolution rate, and drug content uniformity were evaluated. The study showed that synthetic superdisintegrants resulted in faster disintegration and higher dissolution rates compared to natural superdisintegrants. Furosemide oral dispersible films containing croscarmellose sodium and sodium starch glycolate exhibited a rapid disintegration time of under 30 seconds and higher drug release in the first 15 minutes.

In contrast, formulations containing natural superdisintegrants demonstrated slower disintegration times and relatively lower dissolution rates, though they still provided satisfactory drug release profiles. The stability studies indicated that both types of formulations were stable under standard storage conditions. This study concludes that synthetic superdisintegrants provide superior performance in terms of faster disintegration and improved dissolution of furosemide in oral dispersible films, while natural superdisintegrants offer a more eco-friendly, biocompatible alternative with moderate performance.

The findings of this research suggest that furosemide oral dispersible films formulated with synthetic superdisintegrants are an excellent candidate for fast-acting, easy-to-administer dosage forms, providing an effective option for patients with difficulty swallowing tablets, while offering potential for personalized treatment options in the management of conditions requiring diuretic therapy.

1. INTRODUCTION

Furosemide, a potent loop diuretic, is widely used in the treatment of conditions such as heart failure, hypertension, and edema. It is typically administered orally in the form of tablets or liquid formulations. However, the conventional tablet dosage form may not be ideal for patients who have difficulty swallowing, such as the elderly or pediatric patients, or in cases where rapid onset of action is required. Therefore, the development of oral dispersible films (ODFs) presents a promising alternative to traditional oral

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DEVELOPMENT AND ASSESSMENT OF A GUAVA-BASED TRANSDERMAL SYSTEM FOR ANTIDIABETIC THERAPY

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ABSTRACT

The study focuses on the development and evaluation of a transdermal drug delivery system (TDDS) incorporating guava (Psidium guajava) extract, targeting enhanced management of diabetes mellitus. Guava, known for its antidiabetic properties due to the presence of bioactive compounds such as flavonoids and polyphenols, offers a natural therapeutic alternative with minimal side effects.

The TDDS was formulated using a polymer-based matrix system to ensure controlled and sustained release of the guava extract. Characterization techniques such as Fourier-transform infrared spectroscopy (FTIR) and scanning electron microscopy (SEM) confirmed the compatibility and uniform distribution of the extract within the polymer matrix. The patches were evaluated for physical properties, including thickness, tensile strength, folding endurance, and moisture absorption, ensuring optimal application feasibility.

In vitro drug release studies demonstrated a sustained release profile, with a significant percentage of guava extract permeating over 24 hours. Ex vivo skin permeation studies using animal skin models validated the system's ability to deliver bioactive compounds through the dermal layers effectively. Further, in vivo antidiabetic activity was assessed in diabetic rat models, showing significant reductions in fasting blood glucose levels and improved glycemic control.

The developed guava-based TDDS exhibited favorable physicochemical properties, effective drug release, and potent antidiabetic activity, making it a promising alternative to oral therapies. This innovative approach highlights the potential of natural phytochemicals in advanced drug delivery systems, offering a sustainable and patient-friendly solution for managing diabetes.

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DEVELOPMENT AND ASSESSMENT OF A GUAVA-BASED TRANSDERMAL SYSTEM FOR ANTIDIABETIC THERAPY

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ABSTRACT

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UV SPECTROPHOTOMETRIC EVALUATION OF PROTEIN BINDING IN ANTIHYPERTENSIVE MEDICATIONS

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ABSTRACT:

Background: The pharmacokinetics and therapeutic effectiveness of antihypertensive medications are significantly influenced by their protein binding. Clinical results may be enhanced, dose can be optimised, and medication interactions can be predicted with the use of knowledge about the degree of protein binding. A straightforward and precise technique for assessing protein binding is UV spectrophotometry.

The purpose of this study was to use UV spectrophotometry to assess the protein binding of certain antihypertensive medications.

Methods: Using UV spectrophotometric analysis, the study determined the protein binding of popular antihypertensive drugs (such as amlodipine, losartan, and atenolol). Drug solutions were combined with human serum albumin in a number of studies, and the absorption spectra were noted. The difference between the drug concentration before and after protein binding was used to compute the protein binding percentage.

Results: The protein binding of the antihypertensive medications was reliably measured using the UV spectrophotometric technique. Losartan had strong binding affinity (~85%), whereas atenolol demonstrated intermediate protein binding (~45%). The fraction of proteins bound by amlodipine was lower (around 30%). The method's dependability for protein binding experiments was demonstrated by the results, which were in line with values found in the literature.

In conclusion, UV spectrophotometry is a useful technique for assessing how well antihypertensive drugs bind to proteins. Gaining insight into these medications' protein binding properties can help with improved treatment approaches and pharmacological management.

Keywords: pharmacokinetics, atenolol, losartan, amlodipine, UV spectrophotometry, protein binding, and antihypertensive medications.

1. INTRODUCTION

These macromolecular complexes and the interactions between them are responsible for regulating a wide range of biological functions.1. For the purpose of gaining an understanding of the stoichiometry and intensity of intermolecular interactions, a multitude of qualitative and quantitative approaches have been developed and validated.13–2 These interactions have garnered great attention in the context of better understanding the folding,14 solubility,15 osmolarity,16 crystallization,17–19 colloidal behavior,20 self-association,21 viscosity,22–24 and stability25–27 of proteins and other macromolecular systems. A growing number of high-concentration protein therapeutic medications, such as monoclonal antibodies (mAbs), have led to the emergence of a variety of issues in the pharmaceutical industry. These challenges include storage stability (conformational

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A SIMPLE AND RELIABLE UV SPECTROPHOTOMETRIC METHOD FOR ESTIMATING FEXOFENADINE HYDROCHLORIDE IN PHARMACEUTICAL FORMULATIONS

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Abstract:

Fexofenadine Hydrochloride, a widely used antihistamine, requires precise and reliable analytical methods for its quantitative determination in pharmaceutical formulations. This study aims to develop and validate a simple, accurate, and cost-effective UV spectrophotometric method for estimating Fexofenadine Hydrochloride. The method is based on the measurement of absorbance at the drug's maximum wavelength (λmax) of 259 nm in methanol as a solvent.

The method exhibited linearity in the concentration range of 2-20 µg/mL, with a correlation coefficient (R^2) of 0.999, indicating strong linearity. Accuracy was demonstrated with a recovery rate between 98% and 102%, and the method was precise, with %RSD values below 2%. Sensitivity parameters, including the limit of detection (LOD) and limit of quantification (LOQ), were determined to be 0.5 µg/mL and 1.5 µg/mL, respectively.

This validated UV spectrophotometric method proved to be robust and reproducible, suitable for routine quality control and analysis of Fexofenadine Hydrochloride in bulk and tablet dosage forms. The simplicity and cost-effectiveness of this method make it a valuable tool in pharmaceutical analysis.

1. Introduction:

Fexofenadine Hydrochloride is a second-generation antihistamine commonly used for the treatment of allergic conditions such as seasonal allergic rhinitis and chronic urticaria. It works by blocking histamine receptors, which alleviates symptoms like itching, sneezing, and runny nose. Given its widespread use, accurate and reliable analytical methods are essential for quality control during the manufacturing and formulation processes of Fexofenadine Hydrochloride-containing pharmaceutical products.

While several analytical techniques such as high-performance liquid chromatography (HPLC), liquid chromatography-mass spectrometry (LC-MS), and capillary electrophoresis are used for drug analysis, UV spectrophotometry remains a popular choice due to its simplicity, affordability, and ease of implementation. UV spectrophotometry offers a quick and efficient approach to determining the concentration of active pharmaceutical ingredients (APIs) in

RES MILITARIS Social Science Journal

A RANDOMIZED, OPEN-LABEL, SINGLE-DOSE, CROSSOVER STUDY OF TELMISARTAN AND ITS SUBMISSION

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Abstract

Background: Angiotensin II receptor blockers (ARBs), such as telmisartan, are often recommended to treat cardiovascular disorders including hypertension. The purpose of this research was to assess Telmisartan's pharmacokinetics, safety, and effectiveness in a regulated clinical environment. The therapeutic effects of Telmisartan may be directly compared thanks to the randomised, open-label, single-dose crossover design.

This study's goal was to evaluate Telmisartan's pharmacokinetic characteristics, safety, and tolerability after a single dosage utilising a balanced, two-treatment, crossover design.

Methods: This randomised, open-label, crossover trial had 50 healthy participants in total. Telmisartan was administered to participants once, with a washout interval in between doses. To assess the drug's pharmacokinetic properties, such as maximum concentration (Cmax), time to peak concentration (Tmax), and area under the curve (AUC), blood samples were drawn at predetermined intervals. Laboratory testing, vital signs, and adverse event reporting were used to track safety.

Findings: Telmisartan showed quick absorption and reached its maximum plasma concentration (Tmax) in one to three hours. Every subject had the same pharmacokinetic profile, according to the AUC and Cmax values. The medication was well tolerated, and no notable side effects were noted. The drug's stability and predictability in a single-dose administration were confirmed by the similar pharmacokinetic characteristics across treatments.

Conclusion: In healthy volunteers, this investigation showed that telmisartan is safe, well-tolerated, and pharmacokinetically stable after a single dosage. The findings back up the ongoing clinical usage of telmisartan to treat hypertension, but further research is required to determine its long-term safety and effectiveness.

Keywords: pharmacokinetics, safety, hypertension, crossover design, randomised clinical research, telmisartan, and single-dose.

1. INTRODUCTION

Telmisartan is an angiotensin II receptor antagonist (ARB) widely used in the management of hypertension and other cardiovascular conditions. Its therapeutic efficacy is largely dependent on its pharmacokinetic properties, including absorption, distribution, metabolism, and excretion. Despite its clinical utility, understanding the pharmacokinetics of Telmisartan under various conditions is essential for optimizing its clinical use.

A randomized, open-label, single-dose, crossover study design provides a robust framework for evaluating the

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MICROBIAL FLORA ASSOCIATED WITH BANANA FRUIT DETERIORATION: ISOLATION AND CHARACTERIZATION

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Abstract:
Bananas are one of the most widely consumed fruits globally, but they are highly perishable, with rapid deterioration caused by microbial contamination. Various microorganisms, including bacteria, fungi, and yeasts, play a critical role in the spoilage process, affecting the quality and shelf life of bananas. Understanding the microbial flora responsible for banana fruit deterioration is crucial to developing strategies to reduce post-harvest losses and improve storage techniques.

The objective of this study was to isolate and characterize the microbial flora associated with banana fruit deterioration and identify the specific microorganisms responsible for spoilage. Banana fruits showing visible signs of deterioration, such as softening, discoloration, and mold growth, were collected from local markets and farms. The fruits were surface-sterilized to remove any external contaminants and then incubated under controlled conditions to facilitate microbial growth. Serial dilution and plating techniques were used to isolate microorganisms on various selective agar media, including Sabouraud Dextrose Agar (SDA) for fungi, Nutrient Agar (NA) for bacteria, and Potato Dextrose Agar (PDA) for yeasts. Microbial colonies were observed and characterized based on their morphology, growth patterns, and biochemical characteristics.

A diverse range of microorganisms was isolated from the deteriorated banana fruits. Fungal species, particularly Aspergillus spp. and Penicillium spp. were the most commonly isolated, responsible for the soft rot and mold growth observed on the banana skins. Bacterial species, such as Pseudomonas spp. and Bacillus spp., were frequently associated with overripe bananas and contributed to fermentation and off-flavor development. Yeast species, including Candida spp., were also isolated and were particularly prevalent in high-humidity environments, leading to fermentation and further deterioration of the fruit. The isolation and identification of these microorganisms were confirmed through standard microbiological techniques, including Gram staining, biochemical tests, and molecular identification methods.

The study identified a wide array of microorganisms associated with banana fruit deterioration, with fungi being the primary agents of spoilage. Fungal species, particularly Aspergillus and Penicillium, were most prevalent, followed by bacterial and yeast species. This research highlights the microbial diversity involved in banana fruit deterioration and underscores the importance of implementing effective preservation methods, such as antifungal treatments and optimal storage conditions, to reduce post-harvest losses and extend the shelf life of bananas.

Keywords: Banana, microbial flora, deterioration, fungal contamination, bacteria, yeast, isolation, characterization, post-harvest loss.

I. Introduction

In the poor countries, bananas (Musa species) are a significant staple crop.

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QUANTITATIVE DETERMINATION THROUGH UV SPECTROSCOPY: TECHNIQUES AND APPLICATIONS

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ABSTRACT

Background: In chemical, pharmaceutical, and environmental analysis, UV spectroscopy is a commonly used analytical method for the quantitative assessment of several compounds. The technique depends on measuring a sample's absorbance of UV light, which, in accordance with Beer-Lambert's law, corresponds with the analyte's concentration. It is a common option for regular analysis due to its accuracy, simplicity, and non-destructive nature. The purpose of this study is to examine the methods used in UV spectroscopy-based quantitative determination and to showcase the wide range of sectors in which it finds use.

Methods: The basis of UV spectroscopy is the idea that molecules absorb ultraviolet light at certain wavelengths, which is correlated with the concentration of those molecules in solution. Important approaches are covered in the study, such as how to design calibration curves, utilise standards, and evaluate results. The benefits and drawbacks of UV spectroscopy in quantitative analysis are also discussed.

Findings: Drug concentrations, chemical reaction monitoring, and environmental pollution assessment have all benefited from the quantitative use of UV spectroscopy. UV spectroscopy is used in pharmaceutical examination to assess the stability, purity, and dosage form composition of drugs. It is employed in the environmental sciences to quantify the levels of contaminants in water samples, including pesticides and heavy metals. In conclusion, UV spectroscopy is a flexible and trustworthy quantitative analytical method that finds use across several sectors. It is essential for environmental monitoring, research, and quality control because of its quick and precise findings. Nonetheless, its sensitivity and application in complicated samples are still being improved by developments in technique and apparatus.

Keywords: Beer-Lambert law, pharmaceutical analysis, quantitative

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INVESTIGATION OF CO-SOLVENTS' IMPACT ON THE SOLUBILITY OF FUROSEMIDE

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ABSTRACT

Background: The low water solubility of furosemide, a popular loop diuretic, restricts its bioavailability and therapeutic effectiveness. Improving furosemide's solubility is essential to increasing its efficacy and absorption. Co-solvents can improve the solubility of medications like furosemide that are not very soluble in water when combined with water.

The purpose of this study is to determine the best co-solvent combinations that increase the solubility and dissolution rate of furosemide by examining the effects of various co-solvents on its solubility.

Methods: Using ethanol, propylene glycol, and polyethylene glycol in varying proportions with water, the solubility of furosemide was assessed in a variety of co-solvent systems. By creating saturated solutions and utilising UV spectrophotometry to measure the concentration of furosemide, the solubility was ascertained. The solubility in pure water was compared to the results.

Results: The investigation showed that the addition of co-solvents greatly enhanced the solubility of furosemide, with ethanol having the most noticeable effect. It was discovered that the solubility was directly correlated with the mixture's co-solvent content. The combination of ethanol and polyethylene glycol (PEG) produced the greatest solubility improvement among the co-solvents that were evaluated.

In conclusion, co-solvents greatly increase furosemide's solubility, which may increase its bioavailability. This study sheds light on how furosemide should be formulated for improved therapeutic results, particularly when taken orally. It is necessary to do more research on the pharmacokinetic and clinical implications of these results.

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EVALUATION OF CORTICOSTEROID USAGE IN THE MANAGEMENT OF VARIOUS DERMATOLOGICAL CONDITIONS

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Abstract

Corticosteroids are pivotal in the treatment of various dermatological conditions, owing to their potent anti-inflammatory and immunosuppressive properties. This study explores the patterns of corticosteroid use, their therapeutic efficacy, and associated adverse effects in managing skin disorders. Topical corticosteroids (TCs) are widely employed for inflammatory conditions like atopic dermatitis, psoriasis, and eczema, offering rapid symptom relief and inflammation control. Systemic corticosteroids, while reserved for severe cases such as autoimmune blistering diseases, acute hypersensitivity reactions, and connective tissue disorders, provide effective management but carry a higher risk of systemic side effects.

Adverse effects associated with corticosteroids vary depending on the route of administration and duration of use. Topical corticosteroids may lead to skin thinning, striae, and telangiectasia, whereas systemic corticosteroids can result in metabolic disturbances, osteoporosis, and immunosuppression. Strategies to mitigate these risks include using the lowest effective dose, appropriate duration, and educating patients on proper application techniques.

This review underscores the necessity of evidence-based guidelines to optimize corticosteroid therapy in dermatological practice, ensuring maximum therapeutic benefits while minimizing potential harm. Future research should focus on developing novel formulations and alternative therapies to enhance patient safety and treatment outcomes.

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COMPREHENSIVE PHARMACOGNOSTIC, PHYSICOCHEMICAL, AND CHROMATOGRAPHIC CHARACTERIZATION OF POLYHERBAL CHURNA

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ABSTRACT

Polyherbal churna, a traditional herbal formulation, has gained significant attention for its therapeutic potential. This study presents a comprehensive pharmacognostic, physicochemical, and chromatographic characterization of polyherbal churna to ensure its quality, safety, and efficacy. The pharmacognostic evaluation includes the identification of plant materials, organoleptic properties, microscopic features, and standardization of the raw materials. Physicochemical parameters such as moisture content, ash values, and extractive values were assessed to determine the formulation's stability and purity. In addition, chromatographic techniques, including Thin Layer Chromatography (TLC) and High-Performance Liquid Chromatography (HPLC), were employed to profile the chemical constituents and establish a fingerprint for quality control. The study aims to provide a standardized approach for the formulation of polyherbal churna, ensuring its consistent quality and therapeutic reliability. The findings contribute valuable information on the physicochemical properties and chemical profile of polyherbal churna, which can serve as a basis for future pharmacological and clinical evaluations.

I. INTRODUCTION

Polyherbal churna, an ancient formulation in traditional medicine, is composed of multiple plant species, each contributing unique medicinal properties. These preparations are often used to treat a wide range of ailments due to their synergistic effects, offering a holistic approach to healing. The increasing interest in polyherbal formulations stems from their perceived safety, effectiveness, and ability to address multiple health concerns simultaneously, which single-drug therapies may not achieve.

In recent years, the standardization and quality control of polyherbal formulations have become essential to ensure their

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COST-EFFECTIVENESS OF HIV/AIDS MANAGEMENT: A PHARMACOECONOMIC PERSPECTIVE

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Abstract

Background: Managing HIV/AIDS requires long-term treatment plans, which frequently call for lifetime antiretroviral medication (ART). These therapies can be quite expensive, which has an effect on healthcare systems, especially in places with little resources. Pharmacoeconomic studies aid in determining the cost-effectiveness of various treatment approaches, assisting in the management of HIV/AIDS.

This study's goal was to evaluate the cost-effectiveness of different HIV/AIDS care approaches from a pharmacoeconomic standpoint, taking into account both direct medical expenses and health results.

Methods: Information from clinical research, medical reports, and treatment guidelines was used to do a cost-effectiveness analysis. The costs, effectiveness, and gains in patients' quality of life of various ART regimens, including first-line and second-line therapy, were compared. Indirect expenses (patient productivity loss, caregiving) and direct costs (drugs, doctor visits, hospitalisation) were included in the analysis. Health outcomes were measured using quality-adjusted life years (QALYs). Sensitivity analyses were used to assess the effects of different data uncertainties and assumptions.

The findings showed that although first-line ART regimens are initially less costly, individuals who experience treatment failure may benefit from second-line medicines in the long run, which might enhance their quality of life. The cost-effectiveness ratio differed greatly throughout healthcare settings, and because of the high cost of therapy, low-income nations had a harder time putting the best HIV/AIDS management plans into practice.

In summary, pharmacoeconomic analysis of HIV/AIDS care is essential for enhancing patient outcomes, guaranteeing the effective use of medical resources, and refining treatment plans. In order to make the best judgements about HIV/AIDS care, economic evaluations must take into account the patient population, healthcare infrastructure, and local economic realities, even if ART is a very cost-effective treatment.

Keywords: quality-adjusted life years (QALYs), antiretroviral therapy, pharmacoeconomics, cost-effectiveness, HIV/AIDS, and treatment approaches.

1. Introduction

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EVALUATION OF PHYTOCHEMICALS AND IN-VITRO BIOACTIVITY OF HIGH ALTITUDE ESSENTIAL OILS

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Abstract:

Background: High-altitude plant essential oils are prized for their distinct chemical makeup and possible medical uses. These plants, which are frequently subjected to harsh environmental circumstances, provide bioactive chemicals in their essential oils that may have important therapeutic uses. Understanding the medicinal potential of high-altitude essential oils requires assessing their phytochemical composition and in-vitro bioactivity.

This study's goal was to assess the essential oils derived from high-altitude plants' phytochemical makeup and in vitro bioactivity.

Methods: Steam distillation was used to extract essential oils from plants gathered in high-altitude areas. The essential oils' phytochemical composition was ascertained using gas chromatography-mass spectrometry (GC-MS). The medicinal potential of the essential oils was evaluated using in-vitro bioactivity assays, which included cytotoxicity, antioxidant, and antibacterial testing. The disc diffusion method was used to test the antibacterial activity against a variety of bacterial and fungal pathogens, and the DPPH radical scavenging assay was used to assess the antioxidant activity. The MTT assay was used to investigate the cytotoxicity on human cancer cell lines.

Results: A variety of substances with bioactive qualities, such as monoterpenes, sesquiterpenes, and phenolic compounds, were identified by the phytochemical study. Significant antibacterial action was demonstrated by the essential oils, especially against Staphylococcus aureus and Escherichia coli. Furthermore, the oils showed high antioxidant activity, with IC50 values that were on par with those of common antioxidants. Moderate efficacy against cancer cell lines was shown by the cytotoxicity assay, suggesting that these compounds might be developed further as anti-cancer medicines.

The study concludes that a wide range of phytochemicals with noteworthy in-vitro bioactivities, such as cytotoxic, antioxidant, and antibacterial properties, are present in essential oils derived from high-altitude plants. Additional study is necessary to fully investigate the potential of these oils for potential future pharmacological and therapeutic uses.

Keywords: gas chromatography-mass spectrometry, bioactivity, antimicrobial, antioxidant, cytotoxicity, high-altitude essential oils, phytochemical analysis, and medicinal potential.

1. Introduction

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EVALUATION OF A NUTRACEUTICAL TEA FOR ANTIOXIDANT, ANTIMICROBIAL, AND ANTICANCER PROPERTIES

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ABSTRACT

The growing interest in functional foods has led to the development of nutraceutical products with potential health benefits beyond basic nutrition. This study aims to formulate and evaluate a nutraceutical tea with antioxidant, antimicrobial, and anticancer properties. The tea was prepared using a blend of natural ingredients known for their therapeutic effects, including herbal extracts rich in polyphenols, flavonoids, and other bioactive compounds. The antioxidant activity was assessed using the DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid)) radical scavenging assays. Antimicrobial activity was evaluated through disc diffusion and MIC (minimum inhibitory concentration) methods against a range of pathogenic bacterial and fungal strains. The anticancer potential was assessed using in vitro cell culture models to evaluate cell proliferation inhibition and apoptosis induction in cancerous cell lines. The formulation demonstrated significant antioxidant activity, with a high radical scavenging capacity, suggesting its potential for reducing oxidative stress. The antimicrobial testing revealed strong activity against both gram-positive and gram-negative bacteria, as well as common fungal pathogens. Additionally, the tea exhibited promising anticancer effects, inhibiting the growth of cancer cells and promoting apoptosis. The results indicate that this nutraceutical tea holds potential as a functional beverage with multifunctional health benefits, particularly in the prevention and management of oxidative stress-related diseases, infections, and cancer. Further studies, including in vivo testing and clinical trials, are warranted to confirm its efficacy and safety.

I. INTRODUCTION

The concept of nutraceuticals has gained significant attention in recent years due to the increasing consumer demand for functional foods that provide health benefits beyond basic nutrition. Nutraceuticals are bioactive compounds derived from natural sources such as plants, herbs, and fruits, and are known to offer therapeutic effects, including antioxidant, antimicrobial, and anticancer properties. Among these, herbal teas, with their rich array of bioactive compounds, have been traditionally consumed for their medicinal benefits. Recent studies have shown that certain herbal teas contain compounds such as polyphenols, flavonoids, and terpenoids, which exhibit various biological activities, including antioxidant, antimicrobial, and anticancer effects.

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DESIGN, SYNTHESIS, AND IN VITRO EVALUATION OF PEPTIDE-BASED DRUG DELIVERY SYSTEMS

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ABSTRACT

Peptide-based drug delivery systems (DDS) have garnered significant attention due to their ability to enhance the targeting, stability, and controlled release of therapeutic agents. This study focuses on the design, synthesis, and in vitro evaluation of peptide-based DDS, aiming to improve the efficacy of drug therapies while minimizing systemic side effects. Peptides are chosen for their biocompatibility, selectivity, and ability to bind specifically to cellular receptors, making them ideal candidates for targeted drug delivery. In this work, a series of peptide conjugates were synthesized by coupling therapeutic drugs with targeting peptides, ensuring optimal drug release profiles.

The synthesis involved solid-phase peptide synthesis (SPPS) and the conjugation of peptides to drug molecules, followed by characterization using techniques like high-performance liquid chromatography (HPLC), mass spectrometry (MS), and nuclear magnetic resonance (NMR) spectroscopy. In vitro evaluation of the drug delivery systems was conducted to assess their release kinetics, cytotoxicity, and cellular uptake. The drug release profiles were monitored under different physiological conditions to mimic real-life scenarios, ensuring controlled release over extended periods.

The results demonstrated that the peptide-based DDS exhibited enhanced drug solubility, stability, and selective cellular uptake, with controlled release profiles over time. Additionally, the conjugates showed minimal cytotoxicity, indicating their potential for safe therapeutic applications. The findings from this study suggest that peptide-based drug delivery systems hold great promise in revolutionizing the treatment of various diseases by providing targeted therapy, improving patient outcomes, and minimizing adverse effects. Further studies, including in vivo testing, are needed to validate these results and explore clinical applications.

I. INTRODUCTION

A large number of compounds fail to progress through the various stages of preclinical and clinical studies due to a number of reasons, including but not limited to, high cytotoxicity, poor pharmacokinetic rate and inefficient site-specific targeting. Pharmaceutically active substances at physiological conditions should be able to overcome biological obstacles such as albumin binding and aggregation, insolubility, biodegradation/metabolism, the low