1st INTERNATIONAL CONFERENCE ON HEALTH SCIENCES

"INNOVATION AND RESILIENCE IN HEALTHCARE SYSTEM SUSTAINABILITY-INSIGHTS FROM EASTERN MEDICINE, NUTRITIONAL AND PHARMACEUTICAL SCIENCES"

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  Assistant Professor, Department of Internal Medicine University of Toyama, Japan. (Eastern Medicine)
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  Senior Scientist, St Jude Children's, Research Hospital United States (US)
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  Post-Doctoral fellow, Molecular Medicine and innovative Therapeutics (CMMIT) Murdoch University, Australia.
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- **Dr. Shafqat Rasool (BEMS, Ph.D)**
  Head, Department of Eastern Medicine Minhaj Ul Quran University, Lahore

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ABSTRACTS

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Unraveling the Pathogenesis of Obesity and Type 2 Diabetes in Contemporary Perspectives.

Rais Allah Nawaz (BEMS, PhD) *
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Abstract:

The global prevalence of obesity and type 2 diabetes (T2D) has reached alarming levels, posing a substantial public health burden. Recent research has exclusively explored a previously underappreciated aspect of these metabolic disorders-the pivotal role played by immune cells, particularly macrophages, in the pathogenesis of insulin resistance. Insulin resistance precede and predict risk of type 2 diabetes. Skeletal muscle is the primary site of action for control of glucose disposal. Dysfunction in skeletal muscle glucose uptake is a major feature of insulin resistance and is the earlies metabolic abnormality, detected years prior to development of T2D. Insulin resistance in muscle is made worse by obesity and is a key component of metabolic syndrome. While skeletal muscle insulin resistance is the earliest defect in the insulin resistance of T2D, there is ongoing debate regarding the exact nature of the underlying mechanisms and whether cell intrinsic or cell extrinsic factors are responsible for insulin signaling defects. Several studies, including ours, have demonstrated elevated levels of circulating free fatty acids, ceramides, cytokines, and other inflammatory mediators, along with disrupted levels of branched-chain amino acids and other metabolites in the serum of individuals with T2D. Adipose tissue, once considered solely as an energy reservoir, has now emerged as a dynamic immune organ influencing metabolic equilibrium. The transition of macrophages within adipose tissue from an anti-inflammatory M2 phenotype to a pro-inflammatory M1 phenotype plays a pivotal role in the genesis of obesity-induced insulin resistance. Investigating the role of adipose tissue macrophages in instigating and perpetuating low-grade inflammation is essential for comprehending insulin resistance. Our research team actively explores intercellular communication among adipocytes, immune cells, and resident stromal cells in adipose tissue and skeletal muscle.

Our findings underscore the contribution of tissue-resident macrophages in both muscle and adipose tissue to the development of insulin resistance and T2D. Conditional depletion of these macrophages demonstrates a promising approach to ameliorating insulin resistance and T2D. Additionally, our research reveals that macrophage-derived secretory factors, such as TGF-□1, hinder the proliferation and differentiation of stem/progenitor cells, thereby inducing metabolic abnormalities in both adipose tissue and muscle (Nawaz A et., Nature Communications 2017 and 2022). This multifaceted understanding sheds light on the intricate mechanisms underlying insulin resistance and T2D pathogenesis. In addition to the adipose tissue milieu, I will discuss the systemic effects of muscle-derived exosome and miRNA dysregulation in T2D. miRNAs are emerging as important regulators of metabolism in health and disease, and alterations in miRNAs can impact key metabolic pathways/processes, including insulin signaling, beta cell function, and fat/liver function. miRNAs are also secreted from cells in exosomes or small extracellular vesicles (sEVs) which can be taken up and regulate cells at a distance. Dysregulated miRNAs can impact key metabolic pathways and processes such as adipocyte differentiation, insulin signaling, beta cell function and inflammation. We and others shown that M2 polarized bone marrow-derived macrophages secrete TGF-B1, and exosomal miRNA (e.g miR-690), which regulates glucose tolerance and insulin sensitivity in obese mice. In conclusion,

understanding the integral role of immune cells, particularly macrophages, exosome/miRNA, in obesity and T2D pathophysiology offers a promising avenue for novel therapeutic strategies.

In this presentation, my aims to provide a comprehensive overview of current research in this field, fostering a deeper appreciation for the crosstalk between miRNA/exosomes and metabolism in these prevalent metabolic disorders.

Integrating research on complementary and alternative medicine into clinical settings

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Abstract:

A significant component of medical research is clinical trials. They aid researchers in developing more effective strategies for illness detection, prevention, and treatment.

A clinical trial is a type of research study where a therapy or treatment is tried on humans to determine its efficacy and safety. Researchers can also discover which medicines work better than others through clinical trials. Clinical trials yield information that advances medical treatment and advances our knowledge of illnesses and ailments. Despite the fact that many complementary and alternative medicine (CAM) treatments have been around for a very long time—sometimes centuries—less scientific information on them may be available than about conventional medical treatments.People who already utilize complementary and alternative medicine (CAM) therapies run the risk of experiencing major side effects if they take the wrong dosage, use the therapy incorrectly, combine it with other medications that could have harmful interactions, or the treatment may not work as intended in the absence of scientific evidence.

Clinical research has to be turned into advancements in clinical and public health practice. Researchers are investigating complementary and alternative medicine (CAM) treatments in clinical trials to find answers to concerns and to realize its projected social value.

Targeted Drug Delivery System Entrapping Natural Bioactive Compounds for Breast Cancer

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Abstract:

Breast cancer is a major public health concern in Pakistan because it is the most common form of cancer in women worldwide. Drug resistance and off-target effects are main concerns while using chemotherapy. Many therapies have been generated including synthetic, semisynthetic and natural products to cure breast cancer by blocking specific signaling pathways. The Wnt/ β-catenin signaling is one of the signaling cascades regulating development, and has also been strongly associated with cancer.

In Pakistan, a massive range of medicinal plants are grown naturally. The main objective of the present study is characterization and exploration of therapeutic efficacy of bioactive compounds isolated from Monotheca buxifolia and Fagonia arabica leaves extracts, further targeted delivery in human breast cancer cell line MCF-7 was achieved by encapsulation of isolated phytochemicals with mesoporous silica nanoparticles. The significant antioxidant potential of M. buxifolia and F. arabica methanolic leaf extract was determined by DPPH (2, 2-diphenyl-1-picrylhydrazyl) assay and Phosphomolybdate assay. The cytotoxic effect of plant extract on the MCF-7 cell lines was examined by MTT 3-(4,5-dimethylthiazol-2-yl)-2,5- diphenyltetrazolium bromide and Acid Phosphatase assay. UV-visible spectrophotometry (UV), Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), and scanning electron microscopy (SEM) were used to evaluate the synthetized nanoparticles particles. Dose selection (100 and 300 µg/ ml) was done for further real time PCR and annexin V/ PI analysis using Doxorubicin as a positive control. The mRNA expression of Wnt-3a, β- catenin, along with proapoptotic genes (Caspase-1, -3, -7 and -9) in MCF-7 cells lines was measured. We found that nanocarriers actively affect Wnt signaling by suppressing Wnt- 3a and β- catenin gene while inducing Caspase -1, -3, -7 and -9 genes. The silica coated methanolic extract at 100 µg/ ml significantly upregulated the selected caspases and downregulated the Wnt- 3a and β- catenin gene in MCF-7 cells. The cytotoxic effect may be the upshot of the antioxidant potential and high levels of phenols and flavonoids spotted in the methanolic plant extract. Our study concludes that M. buxifolia and F. arabica may serve as an effective anticancer mediator through dynamic gene modulation targeting Wnt/ β-catenin signaling and it can be further characterized at protein level.

Personalized nutrition: Recent advances in nutrition through nutrigenomics

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Personalized nutrition: Recent advances in nutrition through nutrigenomics

Masood Sadiq Butt, Ahmad Din, Aqsa Younas, Maryam Jalal, Maham Bhatty* and Fatima Junaid

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Abstract:

Personalized nutrition is an innovative approach in the field of nutrition and food sciences. In this modern era, personalized nutrition has represented a shift from generalized dietary recommendations to more individualized approach by acknowledging the uniqueness of every individual. This emerging approach holds a great potential for addressing health concerns, optimizing functionality, and promoting well-being by tailoring nutrition to meet the specific needs of an individual. The concept of personalized nutrition revolves around the belief that people differ in their responses to food based on various factors including genetic makeup, which influences how the body processes and utilizes nutrients. Personalized nutrition also contemplates the lifestyle factors such as physical activity, stress level, and sleep pattern, recognizing that these components play a crucial role in maintaining optimum health. Moreover, the dietary preferences, cultural factors, and ethical choices of people are also considered to ensure that

personalized nutrition is not only effective but also practical and sustainable for the individual. The main driving force behind personalized nutrition is the recognition that individuals respond differently to dietary interventions due to genetic variations that influence nutrient metabolism, absorption, and utilization. By understanding the concept of genomics and nutrigenomics, personalized nutrition aims to deliver precise diet plans or recommendations that align with an individual's specific nutritional requirements. The role of personalized nutrition in addressing various infirmities, including obesity, diabetes, cardiovascular diseases, and metabolic disorders is also undeniable. The potential for personalized nutrition to revolutionize the dietary practices and improve public health outcomes highlights the importance of continued exploration and integration within the broader healthcare landscape. As personalized nutrition continues to evolve, ongoing research and corroboration between scientists and healthcare professionals are essential to refine and validate several methodologies, ensuring that it becomes a mainstream approach in promoting optimal health for individuals across diverse populations.

Role of Hypoxia in Diet Induced Obesity and Insulin Resistance.

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Abstract:

Objectives: Pathological expansion of adipose tissue in response to high-fat diet (HFD) causes the adipose tissue to expand at a pace much higher, than the ability of vasculature to match the demand of rapid growing tissue, thus ensuing the hypoxia and induction of HIF-1α gene, which in turn causes the induction of inflammatory state, which is strongly correlated with the systemic insulin resistance. Methodology: Keeping in view, that macrophages in crown-like structures (CLSs) are both hypoxic and inflammatory. We examined how macrophage HIF-1α is involved in high-fat diet (HFD)–induced inflammation, neovascularization, hypoxia, and insulin resistance using mice with myeloid cell–specific HIF-1α deletion that were fed an HFD. Results: Our study revealed that it's the low inflammatory response in KO mice that governs the dual character of macrophage HIF-1α. On one side it controls the expression of angiogenic factors resulting in an increased angiogenesis, despite low VEGF expression. On the other side it causes the improvement in metabolic status, increased energy expenditure in muscle, reduction in fibrosis and oxidative stress and eventually results in an enhanced insulin sensitive state. Conclusion: Our study suggest that myeloid-specific deletion of HIF-1 alpha gene has a beneficial role in imparting the healthy expansion, thus contributing to the improvement of the whole body insulin resistance.

Effect of Polyherbal formulation versus Desferal on Temperaments of Thalassemia Patients in Karachi

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Abstract:

Introduction: Unani system of medicine is an ancient system of healing and follows holistic approach, with comprehensive skills of diagnosis, and multiple arrays of management. According to the philosophy of the Unani system of medicine, thalassemia is a disorder of blood humor (Khilt-e-Dam) with qualitative changes in the formation of Khilt-e-Dam. It is treated by blood transfusion which causes iron overload in the body, if untreated it may be lethal. Avicenna described temperament to be gender and age-dependent. During their young age, males are hot and dry (Haar-Yabis) while females are cold and moist (Barid-Ratab).

Objectives: The temperament of thalassemia patients was determined before and after treatment with either polyherbal formulation (Irochel) or standard allopathic drug desferrioxamine (Desferal).

Methodology: The present study describes the use of a polyherbal Unani formulation (Irochel) for the management of thalassemia patients. This study was conducted at Faculty of Eastern Medicine, and the patients with thalassemia were selected by Husaini Blood Bank, Karachi. The temperament of all the subjects (mean age ~14 years) was determined before and after three months of treatment using standard parameters. The Irochel group (n=30 males and 36 females) received (1g/day b.d), while Desferal group (n=34 males and 32 females) received subcutaneously through an infusion pump, 20-60 mg/kg, 8-12 hours 5 days/week.

Results: In Irochel treated group (n = 66), the percent of various temperaments before and after treatment were: Sanguineous (18.2 % vs 31.8 %), Phlegmatic (12.1 % vs 19.7 %), Bilious (30.3 % vs 27.3 %) and Melancholic (39.4 % vs 21.2 %) temperaments. In Desferal treated group (n = 66), it was: Sanguineous (19.7% vs 13.6%), Phlegmatic (15.2 %vs 13.6%), Bilious (28.8 %vs 33.3%) and Melancholic (36.4 % vs 39.4 %) temperaments.

These results clearly indicated that Irochel improved the disturbed temperament in all the subjects. On the contrary, Desferal was ineffective in restoring the temperament of thalassemia patients.

Conclusion: The effect of blood transfusion causes an increase in serum iron and ferritin levels and results of this study demonstrated that it has cold and dry qualities reflecting dominant melancholic nature in patients with thalassemia major. Therefore, the hot and moist effects producing by herbal formulation causing relief in symptoms of melancholic dystemperament.

Adipose tissue and macrophages remodeling; the underlying cause of insulin resistance

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Abstract:

Expansion of white adipose tissue (WAT) via recruitment of adipocytes (hyperplasia) is metabolically healthy, whereas that through the enlargement of pre-existing adipocytes (hypertrophy) leads to

metabolic complications. Previous reports suggest that in animals receiving a high-fat diet (HFD), only adipocyte progenitors (APs) in epididymal WAT (eWAT) have proliferative potential. However, the proliferative and adipogenic capacity of APs in the inguinal WAT (iWAT) of male mice remains contradictory. Our objective is to elaborate on the proliferative and adipogenic potential of APs in iWAT of HFD-fed male mice. We generated PDGFRα-GFP-CreERT2/tdTomato (KI/td) mice and performed comprehensive analysis, including immunohistochemistry, flow cytometry, and gene expression analysis. Contrary to the findings of others, we found increased numbers of newly generated tdTomato+ adipocytes in iWAT than that in eWAT of male mice. We found that in male mice, iWAT has more proliferating tdTomato+ APs with higher expression of Dpp4 and Pi16 than gWAT of mice fed HFD for 8 weeks. Furthermore, I found that hyperplasia is associated with reduced expression of proinflammatory genes. Reduced expression of M1-related macrophages is associated with high expression of metabolically favorable genes. Collectively, in male mice, compared with eWAT, iWAT undergoes hyperplasia in response to 8 weeks of HFD feeding through the recruitment of newly generated adipocytes. Hyperplasia is associated with improve metabolism less inflammation, while hyperplasia is associated with phenotypic switching of macrophages towards M1 like macrophages, thereby causing insulin resistance.

Antiurolithiatic Effect Of Ethanolic Extract Of Zaleya Pentandra in Ethylene glycol induced Calcium Oxalate crystals rat models

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Abstract:

Background: Nephrolithiasis, the development of renal crystals, is a prevalent disorder globally and its is increasing each year, potentially due to changes in lifestyle, diet, and climate change. Current stone removal techniques, while effective, are expensive and limited accessibility. Despite advancements in urolithiasis research and understanding of physical symptoms, therapeutic options remain scarce, especially for stone recurrence. Although traditional herbal plants have been used to treat nephrolithiasis, scientific evidence supporting their efficacy in curing and preventing kidney stones is limited. Therefore, this study aims to investigate the antiurolithiatic, diuretic, and antioxidant activity of Zaleya pentandra (Zp.Crd), which is traditionally used for the prevention of kidney stones.

Methods: The crude ethanolic extract of Z. pentandra (Zp.Crd) was evaluated for its antiurolithiatic effect through *in vitro* and *in vivo* studies. In vitro experiments assessed the effect of Zp.Crd on crystal count and morphology of calcium oxalate using metastable calcium and oxalate solutions. *In vivo*, diuretic and antiurolithisc was evaluated in Wistar rats.

Results: In the *in vitro* experiments, Zp.Crd transformed calcium oxalate crystals from calcium oxalate monohydrate (COM) to calcium oxalate dihydrate (COD), which are less harmful in terms of crystal adhesion to the epithelial cells of the urinary tubules. In the *in vivo* diuretic study, Zp.Crd showed dose-dependent (30-300 mg/kg BW) diuretic activity in rats by significantly increasing urinary sodium (Na+) and potassium (K+) excretion similar to the standard diuretic drug; hydrochlorothiazide (HCT). In the urolithiasis rat model, Zp.Crd

exhibited dose-dependent antiurolithiatic effects by decreasing the formation of kidney crystals and significantly altering lithogenic factors like crystalluria, oxaluria, calcium, creatinine, and urea levels in the serum, induced by ethylene glycol.

Conclusion: Zp.Crd exhibits antiurolithiatic activity against calcium oxalate stones through CaOx crystal inhibition, diuretic activity, antioxidant properties, hypocalciuric effects, and hypercitrauric actions. These findings support the pharmacological use of *Z. pentandra* (Zp.Crd) in Urolithiasis, providing a basis for future clinical and safety studies of this plant.

Keywords; Urolithiasis, *Zaleya pentandra, in vitro, in vivo*

NAD+ metabolism ameliorates Non alcoholic fatty liver disease (NAFLD)

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Abstract:

The global burden of obesity has been rising rapidly, prone to numerous metabolic diseases, e.g., Non-Alcoholic Fatty Liver Disease (NAFLD), Type 2 Diabetes Mellitus, and cardiovascular diseases. NAFLD is the most familiar liver disease worldwide, which can potentially convert into NASH, Liver cirrhosis, and Hepatocellular carcinoma at later ages. Hepatic steatosis is the hallmark of NAFLD, and pharmacological therapy to cure NAFLD is still required. NAD+ levels tend to decline with the progression of NAFLD; on the contrary, NAD+ boosters have an enunciated effect in rebounding hepatic steatosis and insulin resistance. The NAD+ acts as a cofactor and coenzyme in diverse biological processes, including redox reactions and energy metabolism. Preclinical studies showed that dietary NAD+ supplementation alleviates hepatic steatosis and glucose tolerance by improving mitochondrial functions and reducing oxidative stress. However, we do not fully understand which NAD+ precursors have a prominent role in rescuing NAFLD. In this study, we did a comparative analysis between NAD+ precursors. We used a high-fat diet to induce obese mice and supplemented it with various NAD+ precursors and ruled out the most promising NAD+ booster to treat NAFLD.

In vitro evaluation of anti-hypertensive potential of Rumex hastatus, its green silver nano particle synthesis, and characterization

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Abstract:

Rumex hastatus is traditionally claimed to possess diligent potential in the management of hypertension. Therefore, current study was designed to explore the effects of Rumex hastatus hydro-ethanolic extract and its silver nanoparticles on hypertension using in vitro studies. Currently, the world has focused on the synthesis of nanoparticles by using plant extracts because this technique is eco-friendly, less costly,

and improves drug delivery. To take advantage of the vast therapeutic potential of silver nanoparticles, hydro-ethanolic extract of the plant Rumex hastatus was used to analyze antioxidant activity by DPPH inhibition and in vitro ACE inhibitory activity in this study. According to the findings, the medicinal plant Rumex hastatus contains several active phytochemicals like; protein, carbohydrate, tannins, phenols, flavonoids, saponins, glycosides, alkaloids, fixed oil, gum and mucilage and quinones. Rumex hastatus is rich in tannins, flavonoids, alkaloids and steroids that make it capability to reduce the ionic form of Ag+ to Ag0 and stable them. Besides, the crystallinity of Ag+, reduction/stability sample gave λmax peaks in between 400-500nm (UV-vis spectra). Fourier transforms infrared spectroscopy (FT-IR spectroscopy) shown functional groups such as unsaturated ketone, alcohol, aldehyde and structural morphology were determined through X-ray diffraction (XRD) which shown strong reflection at 39.50° to determine the formation of nanocrystals. Some particles seem massive, others have apparent sizes as tiny as 10µm and 0.5 µm in scanning electron microscopy (SEM) respectively. Hydro-ethanolic extract prepared with the extraction yield of 8%. The hydro-ethanolic plant extract and nano particle shown high radical scavenging activity. This study shown that IC50 DPPH radical inhibition of hydro-ethanolic extract and Ag-NPs was 58.59 µg/ml, 18.22µg/ml. IC50 shown that Ag-NPs was more strongly active than Rumex hastatus extract as lower IC50 reflect higher radical scavenging activity.

The primary objective of this work was to discover inhibitors of Angiotensin converting enzyme in the Rumex hastatus medicinal plant for the development of the new antihypertensive drug. Concentration-dependent inhibitory effects of test samples shown R. hastatus Ag-NPs exhibited highest ACE inhibitory potency as compared to crude extract of R. hastatus. As lower IC50 reflects higher ACE inhibitory activity, Ag-NPs reflect higher inhibitory activity (7.56 µg/ml) as compared to Rumex hastatus test sample (187.9µg/ml). The value of p was <0.05 which shown the significance of ACE inhibitory and antioxidant activity. In future further studies are needed to evaluate the effects of silver nanoparticles of Rumex hastatus in cardiovascular diseases specially hypertension in vivo studies

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Challenges and Opportunities for the Sustainability of Human Nutritionists in the Healthcare Systems of Pakistan

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Abstract:

The field of human nutrition plays a pivotal role in promoting public health and well-being, making nutritionists integral members of healthcare systems worldwide. In Pakistan, a country grappling with a myriad of health challenges, the sustainability of human nutritionists within the healthcare framework is a critical concern. This study explores the challenges and opportunities facing human nutritionists in Pakistan's healthcare systems, shedding light on the complexities of their roles and the potential avenues for enhancing their sustainability. Challenges confronting human nutritionists in Pakistan include limited recognition and integration within the broader healthcare infrastructure. Despite the increasing prevalence of diet-related diseases, the role of nutritionists often remains undervalued, resulting in insufficient institutional support and resources. Moreover, the shortage of qualified professionals, inadequate training programs, and disparities in access to nutrition services further impede the effective delivery of nutrition interventions. The abstract also delves into the socioeconomic challenges that hinder the sustainability of human nutritionists. Limited public awareness, coupled with prevalent

cultural and societal norms, often results in a lack of appreciation for the importance of proper nutrition. Additionally, economic constraints and resource scarcity pose barriers to the implementation of comprehensive nutrition programs and initiatives. However, amidst these challenges, several opportunities emerge for bolstering the sustainability of human nutritionists in Pakistan's healthcare systems. Strengthening the education and training infrastructure for nutrition professionals, fostering interdisciplinary collaboration within healthcare teams, and raising awareness about the importance of nutrition through targeted public health campaigns are essential strategies. Furthermore, leveraging technological advancements for remote consultations and expanding community-based nutrition programs can enhance the reach and impact of nutritionists, especially in underserved areas. It is concluded that addressing the challenges and capitalizing on the opportunities identified in this abstract can pave the way for the sustainability of human nutritionists in Pakistan's healthcare systems. Recognizing the crucial role nutritionists play in preventive healthcare, advocating for policy reforms, and investing in their professional development are imperative steps toward fostering a resilient and effective nutrition ecosystem in the country.

Keywords: healthcare systems human nutritionists, consultations, challenges and opportunities

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Enhancement of hyperthermia induced cancer cell death by natural compounds

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Abstract:

Hyperthermia (HT) is a good therapeutic tool for non-invasive cancer therapy; enhancing the cell-killing potential of chemotherapy through temperature elevation. Here, Isofraxidin (IF), a coumarin compound widely found in plants, such as the Umbelliferae or Chloranthaceae families and withaferinA (WA), a steroidal lactone derived from the plant Withanias somnifera Dunal, has been investigated for its possible enhancing effects on HT- induced cell death in acute monocytic leukemia U937 and HeLa cells. Cell death was measured by Annexin V-FITC/PI double staining assay using flow cytometry and cell viability was observed by cell counting kit assay, and DNA fragmentation. The mechanism involved in the combination was explored by measuring changes in the mitochondrial membrane potential, (MMP), intracellular ROS generation, expression of apoptosis related protein, and intracellular calcium ion level. It was demonstrated that both natural compounds enhanced HT-induced apoptosis. The results showed that combined treatment enhanced loss of mitochondrial membrane potential, increased in intracellular ROS generation, and protein expression levels of caspase-3, caspase-8 and phosphorylated-JNK. Collectively, the data demonstrated that these natural compounds enhanced HT-induced apoptosis via a reactive oxygen species mediated mitochondria/caspase-dependent pathway.

Exploring the Therapeutic Potential of Jamun Fruit (Syzygium cumini L.) Nectar in Diabetes Management

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Abstract:

Jamun fruit (Syzygium cumini L.), widely acknowledged as Java plum or Indian blackberry, has enjoyed traditional prominence across diverse cultures owing to its medicinal attributes. The investigation explores the nutritional impact of Jamun (Syzygium cumini L.) on diabetes, offering insights into the prospective therapeutic advantages inherent in Jamun fruit for the management and alleviation of diabetes mellitus. This study aims to uncover the multifaceted impact of low-calorie Jamun fruit nectar on diabetes, providing a detailed understanding of its potential role in addressing the complex dynamics associated with this metabolic disorder. The research evaluates the bioactive compounds present in low calorie Jamun fruit nectar, such as polyphenols, flavonoids, and anthocyanin, which are believed to possess anti-diabetic properties. The study incorporates both in vitro and in vivo experiments to analyze the effects of low-calorie nectar on glucose metabolism, insulin sensitivity, and other relevant markers in diabetic subjects. Results indicate a significant improvement in glycemic control, suggesting that Jamun nectar may contribute to the regulation of blood sugar levels. Additionally, the antioxidant properties of Jamun are explored, highlighting its potential role in reducing oxidative stress associated with diabetes. The findings of this research emphasize the importance of considering low-calorie Jamun nectar as a dietary supplement for individuals with metabolic disorder of diabetes, potentially providing a natural and accessible means of diabetes management. The study contributes valuable insights into the nutritional aspects of Jamun fruit nectar and its potential as a functional food for those with diabetes.

Keywords:

Syzygium cumini L., Jamun, Low calorie Jamun Nectar, Stevia, Sweetner

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Development of Nano-drug Delivery System Using Natural Compound Extracted from Tujia Ethnomedicine For the Treatment of Cervical Cancer

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Abstract:

Aim: Development of a new drug-delivery system using a compound derived from Pronephrium penangianum (J5) for the treatment of cervical cancer. Materials & methods: The delivery system was developed using Prussian blue nanoparticles, camouflaged by red blood cell membrane and with folic acid surface modifications. Results: Our results showed the successful development of a nanodrug-delivery system, which increases the half-life and immune evasion ability of the drug. The mechanism of this system was through suppressing B-cell lymphoma 2 and increasing B-cell lymphoma 2-associated X protein and the cleaved caspase level. An in vivo study also confirmed good antitumor

activity without any side effects to normal tissue. Conclusion: This drug-delivery system provides a good alternative for the treatment of cervical cancer using J5.

Traditional Wisdom, Modern Solutions: A Dive into Eastern Medicine Innovations

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Abstract:

The present summary encapsulates a keynote speech titled Traditional Wisdom, Modern Solutions: A Dive into Eastern Medicine Innovations, which centers on amalgamating traditional Eastern Medicine and contemporary solutions and the transformative potential of acupuncture and herbal remedies for enhancing mental health and physical well-being.

The speech begins by delving into Eastern Medicine's holistic approach and intricate connection to diverse body systems. It then advances to an in-depth examination of the efficaciousness of acupuncture in treating depression, elucidating how it fosters neural plasticity functions, regulates signaling pathways, and positively affects the gut-brain axis, thus providing a holistic approach to mental health.

The invited speaker further discusses the role of Elephantopus scaber in wound healing, emphasizing its antibacterial properties and the development of a polyherbal formulation for accelerated wound contraction. Additionally, various herbs and prescriptions from Traditional Chinese Medicine for managing health conditions are categorized, shedding light on common syndrome types and frequently used medications.

The speech concludes by addressing sustainability challenges faced by the Traditional Chinese Medicine industry, exploring green practices, advocating for environmental awareness among practitioners, and proposing targeted efforts for integrating sustainable practices at the organizational level. In essence, the speech provides a comprehensive exploration of the potential of Eastern Medicine, blending traditional wisdom with modern solutions and advocating for sustainability in the practice of Traditional Chinese Medicine.

Exploring Traditional Eastern Medicine in Modern Healthcare

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Abstract:

The gradual integration of medicinal products from the Eastern medicine system into current healthcare systems offers groundbreaking potential that is in line with the goal of adaptability and long-term viability in healthcare delivery. Eastern medicine, rooted in centuries-old traditions and holistic philosophies, offers a diverse array of pharmaceuticals derived from natural sources such as herbs, botanicals, and minerals. These drugs offer an integrated approach to medical care, treating the root

causes of illness as well as to its symptoms and encouraging general health. Moreover, their cultural relevance and accessibility make them attractive options for a broad spectrum of patients, fostering engagement and compliance. As scientific research increasingly validates their efficacy and safety through rigorous trials and studies, Eastern medicine pharmaceuticals emerge as credible alternatives or complements to conventional treatments. Eastern medicines have diverse pharmacological profiles with anti-inflammatory, immunomodulatory, and neuroprotective effects that are considered safer and tolerable than synthetic drugs when used in suitable doses and formulations. By leveraging the transformative potential of Eastern medicine pharmaceuticals, healthcare systems can enhance their sustainability by promoting preventive care, reducing reliance on synthetic drugs, and embracing patient-centered, culturally sensitive approaches to healing. The vast biodiversity of natural sources in East Asia provides a rich source of novel compounds with better therapeutic indexes along with molecules that can be used as a starting platform for the discovery of new metabolites by integrating with modern drug-designing tools i.e. Computer Aided Drug Designing Techniques. Utilizing perspectives from Eastern pharmaceutical sciences, it addresses modern techniques for drug development and healthcare provision. Despite its potential, standardization of herbal formulations, validation of safety and efficacy data and intellectual property issues are the major challenges faced by Eastern medicine during the modern era. This abstract aims to explore the multifaceted contributions of Eastern medicine pharmaceuticals towards the development of sustainable healthcare systems, offering insights into their role in shaping the future of healthcare delivery and patient outcomes.

Assessment of medicinal plants to ameliorate Bisphenol A induced reproductive toxicity in female rat model

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Abstract:

Approximately in 37% of all infertile couples, female infertility. Based on having maximum TPC, TFC and antioxidant activities of Tinospora cordifolia methanolic extract (MthTc) and Asparagus racemosus methanolic extract (MthAr), were selected for the in vivo authorization in the management of female reproductive toxicity induced by BPA. TPC and TFC were higher in MthTc (28.01 ± 0.451 mg GAE/g and 23.31± 0.031 mg QE/g respectively) and MthAr (26.43 ± 2.523 mg GAE/g and 20.39 ± 0.032 mg QE/g respectively). MthTc possesses the highest FRAP activity (789.67±5.401 µmole Fe2+/g) followed by MthAr (733.26±25.462 µmole Fe2+/g). MthAr showed highest ABTS activity (693.22±5.361 µM TE/g) followed by MthTc (550.11±13.443 µM TE/g). While EthAr has maximum DPPH scavenging action (IC50: 0.019±0.0031 mg/ml) in all the selected plant extracts followed by MthTc (0.279±0.012 mg/ml) α-amylase and α-glucosidase inhibition activities were likewise highest in MthAr (0.372±0.042 mg/ml0.382±0.042 mg/ml respectively) and MthTc (0.367±0.062 mg/ml; 0.384±0.022 mg/ml respectively). For experimental trial, fifty six rats were allocated into 3 groups i.e control (n=8; chow maintenance diet), Healthy (n=16; chow maintenance diet) and BPA group (n= 32; CMD and Bisphenol A dissolved in olive oil). Healthy group rats was further divided into 2 groups (n=8) on the basis of treatment. Toxicity was induced in thirty two rats by giving dose of Bisphenol A for 7 days at 10 mg/kg/d dose. After confirmation of sexual hormone disturbance, the BPA induced female rats was further divide into 4 groups (n=8) on the basis of treatment i.e. CON (chow maintenance diet at 48g/kg body weight); Healthy+Tc (MthTc at dose 400 mg/kg); Healthy+Ar (MthAr at dose 400 mg/kg); BPA+Saline (treated

with normal saline solution); BPA+ estradiol (estradiol at dose 1 µg/day); BPA+Tc (treated MthTc at dose 400 mg/kg); BPA+Ar (treated with MthAr at 400 mg/kg). At end of the experiment after 21 days, rats at the estrus phase from every group were decapitated and blood samples were taken for the serum separation. By mean of one-way analysis of variance (ANOVA), data were evaluated statistically. FSH, LH and testosterone serum levels were significantly ($P \leq 0.05$) reduced in the BPA+Ar and BPA+Tc groups in comparison with BPA+Saline group.

Keywords

Reproductive toxicity; Oxidative stress; Plant extracts; Enzyme inhibitionactivity.

Role of Extra Virgin Olive Oil on Blood Glucose, BMI and Treatment Outcome against Non-Alcoholic Fatty Liver Disease

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Abstract:

Background: Non-alcoholic fatty liver disease (NAFLD) present in approximately ten to twenty-four percent of total population of Pakistan. Proper diet and nutrients specially amount of fat intake can revert the severe condition of NALFD. Extra virgin olive oil improves lipid profile HbA1c and liver function enzymes to alter the chronic disease and its complications.

Objective: Aim of present study to check effect of extra virgin olive oil on lipid profile, LFTs and Hba1C tests of nonalcoholic fatty liver disease patients.

Methods: For this study data was collected from District Head Quarter Hospital Sheikhupura after obtaining Ethical approval letter from an ethical review committee of the Riphah International University Lahore. In this study a total of 60 patients (n=22 female, n=38 male) Non-alcoholic Fatty Liver Disease patients were selected. They were divided into treatment group (Extra Virgin Olive Oil-EVOO) and control group (placebo) comprising thirty patients per group. The data was analyzed by using SPSS 27.0 statistical software.

Results: Mean values and SD with respect to age in treatment and control group are 34±7.5, 38±10.4 respectively. Post therapeutic results for treatment group of lipid profile including total cholesterol (mg/dl) 201.7±64.43 P=0.014, High-Density lipoprotein 43.2±7.6, P<0.001, Low Density Lipoprotein (LDL) (mg/dl) 100.4±21.6, P<0.001 and Triglycerides 187.6±63.4, P=0.01 are respectively. Post values for LFT's in treatment group ALT (36.7±8.10, P<0.001), AST (31.8±8.9, P<0.001) u/l]. HbA1C (%) result for treatment group is 5.45±1.2, P<.001. After treatment of 45 days the weight analysis showed significant results (75.5±11.9, P =0.03).

Conclusion: Daily intake of EVOO lower the plasma lipid percentage, blood glucose levels and also reduce ALT and AST levels.

Keywords: Hepatic steatosis, non-alcoholic fatty liver, EVOO, HbA1C, lipid profile

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Wound healing, antioxidant and antibacterial activities of polyphenols of Psidium guajava L. leaves

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Abstract:

The current study aimed to evaluate the in vivo wound healing potential of Psidium guajava L. by wound excision model owing to its ethnomedicinal use as a wound healer since olden times. P. guajava leaves were extracted using methanol-chloroform (1:1). Phytochemical analysis of P. guajava leaves extract (PGLE) was performed using total phenolic content (TPC) assay, total flavonoid content (TFC) assays, and High-performance liquid chromatography (HPLC). In vitro, antioxidant potential (DPPH radical scavenging assay, total antioxidant capacity (TAC) assay, and ferric reducing antioxidant power (FRAP) assay), antibacterial activity (broth microdilution method), and hemolytic analysis of PGLE were performed. In vivo, wound healing proficiency of PGLE (10, 5, and 2.5% w/w) was determined by estimating hydroxyproline and endogenous antioxidant markers. TPC and TFC were found to be 57.5 ± 0.37 µg gallic acid equivalent/mg extract and 32.1 ± 0.24 µg quercetin equivalent/mg extract, respectively. A prominent concentration of polyphenols was demonstrated by HPLC-based quantification with the highest value of rutin which is 12.3 ± 0.12 µg/mg extract. A noteworthy DPPH radical scavenging activity with an IC50 of 40.7 µg/ml, TAC, and FRAP i.e., 159.3 ± 0.11 and 206.1 ± 0.17 µg ascorbic acid equivalent/mg extract, respectively were exhibited by PGLE. Significant antibacterial activity against Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeroginosa, and Methicillin-resistant Staphylococcus aureus with the minimum inhibitory concentration of 250, 400, 400, and 500 µg/ml respectively was depicted by PGLE and found biocompatible with 1.1 ± 0.16% hemolysis. Significant wound contraction, faster epithelialization (9 ± 1 days), extensive fibroblast proliferation, and substantial neovascularization were observed in the 10% PGLE-treated group also evident by histopathological examination. Significant hydroxyproline (15.7 ± 1.02 µg/mg tissue), catalase, peroxidase (5.4 ± 0.26 and 6.1 ± 0.35 U/mg tissue) and glutathione content (9.7 ± 0.06 mmol/mg tissue) with p-value of less than 0.01 was demonstrated by 10% PGLE. A reduction in lipid peroxidation (0.5 ± 0.07 mmol/mg tissue) was also observed at the same concentration (10%). These findings scientifically validate the potent pharmacological effects of P. guajava phytochemicals and suggest their promising role as wound healing agents.

PDGFRα+ adipocyte progenitors-derived follistatin regulates glucose metabolism and insulin sensitivity in obesity

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Abstract:

Background: Follistatin (Fst) antagonizes several TGF-β superfamily members including activins. Fst increases with obesity in white adipose tissue (WAT) and an increase in plasma Fst is found to be associated with type 2 diabetes (T2D).

Aims and objectives: How adipose tissue-derived Fst contributes to insulin resistance (IR) remains unknown. We generated PDGFRα+-adipocyte progenitors (APs) specific Fst KO mice to evaluate the role of Fst gene in adipose tissue.

Results: Fst KO mice showed improved glucose metabolism and insulin sensitivity during high-fat diet (HFD) feeding. Fst KO mice displayed increased expression of metabolically favorable genes with increased M2 macrophages in the epididymal WAT (eWAT) upon HFD-feeding. We also found that KO mice develop significantly fewer crown-like structures and reduced lipid-associated macrophages (LAMs) as compared to control mice. Activin A inhibited the expression of Trem2 and Cd9 in bone-marrow-derived metabolically activated macrophages (MMe) in vitro, while this effect is reversed by Fst co-treatment.

Conclusion: PDGFRα+ APs-derived Fst gene deletion improves WAT health by modulating macrophage phenotypes, thereby ameliorating IR and T2D.

Fast Swelling Nanogels for Solubility Enhancement of Chlorthalidone; Synthesis, Characterization and Biosafety Evaluation

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Abstract:

Objective of the study was to enhance solubility of poorly soluble diuretic drug Chlorthalidone, which is being used from past 50 years as drug of choice to lower hypertension. Nearly 90 % of drug candidates are facing the problem of solubility. Chlorthalidone, a BCS Class IV drug has compromised efficacy because of its poor solubility which needs to be enhanced. Sodium alginate based nanogels were fabricated for this objective by free radical polymerization technique. Structural characterization, drug loading, swelling, sol-gel transition, in-vitro release, solubility and toxicity studies were performed to evaluate different parameters of nanogels. Characteristic peaks of fundamental ingredients used in synthesis of polymeric nanogels were detected by Fourier transform infrared spectroscopy (FT-IR), confirming successful cross-linkage. FT-IR spectrum of nanogels loaded with Chlorthalidone presented characteristic peaks of drug, proving successful loading of drug. Thermal analysis and Powder X-ray diffractometry suggested thermal stability and amorphousness of the system. Well-defined porous structure was observed by Scanning electron microscope. Zeta size analysis showed that nanogels were having size of 189 ±18.35 n.m. Solubility enhancement factor proved that solubility of the poorly soluble drug has been enhanced potentially. Fabricated nanogels can be used to enhance solubility of hydrophobic drugs.

Green Synthesis of Silver Nanoparticles (AgNPs) from Moringa oleifera leaves Extract Structural Characterization, and their Antibacterial Potential approach.

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Abstract:

In the field of nanotechnology, the metallic nanoparticles are of remarkable interest because of their unique electronic, magnetic, chemical, and mechanical properties. In the present work, silver nanoparticles (AgNPs) were synthesized using bio-reduction method. Silver nitrate was used as metallic precursor and the extract of Moringa oleifera leaves with different concentrations was used as reducing as well capping agent. The extract exhibited strong potential in rapid reduction of silver ions for the synthesis of silver nanoparticles. The synthesized silver nanoparticles were characterized by UV-visible spectroscopy, X-ray diffraction (XRD), and scanning electron microscopy (SEM) techniques. The absorption SPR peaks appeared in the range of 415 to 439 nm. SEM analysis exhibited that particles were spherical in shape with size distribution range from 10 nm to 25 nm. The synthesized silver nanoparticles were pure crystalline in nature as confirmed by the XRD spectra with average crystallite size 7 nm. In vitro antibacterial activity of the prepared silver nanoparticles colloidal samples as well the extract was studied using different concentrations of AgNPs (C1 = 100 µg/ml, C2 = 50 µg/ml, C3 = 25 µg/ml) by well diffusion method against Gram negative Escherichia coli. The antibacterial performance was assessed by measuring the zone of inhibition (ZOI). The results suggested that AgNPs prepared by green approach can be considered as an alternative antibacterial agent.

Ginsenoside Rg3 extracted from Panax ginseng root inhibits non-small cell lung cancer growth and metastasis

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Abstract:

Introduction:

Ginseng, the root of Panax ginseng has been widely used in East Asian countries for thousands years as a natural tonic. Ginsenosides Rg3, extracted from Panax ginseng root are the main active components among more than 100 other ginsenosides demonstrated a wide range of pharmacological activities such as hepatoprotection, neuroprotection, cardiovascular-protection, anti-fatigue, anti-oxidant and anti-cancer.

Objectives: This study demonstrated its efficacy against non-small cell lung cancer in mice.

Methods: Xenograft mice model of NCI-H1299 cells of lung cancer was established. The NCI-H1299 cells (5x106) in 0.5 ml of PBS were inoculated subcutaneously in the right flank of male Balb/c nude mice (n=12) under specific pathogen free (SPF) conditions. After tumor growth for 2 weeks, mice were randomly divided into2 groups, control and ginsenoside Rg3 treated groups. The duration of ginsenoside Rg3 (100 µg/ml) administration (i.p) was 28 days and tumor volume and body weight were

measured throughout this period. At the end of treatment mice were sacrificed and tumor weight and volume were measured.

Results: The ginsenoside Rg3 treatment significantly decreased tumor size, weight and volume as compared to control group. It was accompanied by reduction tumor proliferation using proliferating cell nuclear antigen (PCNA) expression. Gross metastasis of tumor was assessed in different mice organ tissues by hematoxylin and eosin (H and E) staining. In treated mice metastasis was attenuated than non-treated mice.

Conclusion: These results suggest that ginsenoside Rg3 will be an effective therapy for lung cancer growth and metastasis alone or in combination with low doses of conventional chemotherapy, thereby minimize the toxicity and morbidity associated with therapy.

Antioxidant, Antibacterial and Toxicological Evaluation of Selected Medicinal Plants for the Management of Atopic Dermatitis

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Abstract:

Atopic dermatitis is a chronic, highly pruritic, eczematous skin disease affecting children and adults. It is characterized by itching, rash, dry skin, scales and pruritis. Global prevalence of atopic dermatitis is 15-30% (Children) and 2-10% (adults), while in Pakistan it is higher (18-26%). Its diagnosis is based on history and physical examination. Previous studies demonstrated that extract of Azadirachta indica, Sphaeranthus indicus, Lawsonia inermis and Fumaria indica possesses beneficial actions in disease management including through intonation of different activities including antioxidant, antibacterial activities.

Objectives: To evaluate the antioxidant, antibacterial activity, and toxicity of selected medicinal plants.

Methodology: This research based study evaluated antibacterial activity of above mentioned plants ethanolic extracts against different bacteria's by disk diffusion method. This work also evaluated antioxidants activity and In vivo acute oral and dermal cytotoxicity was determined by using Swiss albino mice and albino rabbits, correspondingly.

Results: The plants illustrated antibacterial activity in opposition to 3 gram negative bacteria comprising Escherichia coli, Klebsiella pneumonia, Proteus vulgaris and a gram positive Staphylococcus aureus. We didn't examine any lethal outcome of plants on the skin keratinocytes. Moreover, these plants were non-irritant according to draize score (OECD TG404, 2002).

Conclusion: We concluded that plants possesses antibacterial and antioxidants effects and is safe, non-toxic, non-irritant, and these plants would be subjected for additional biochemical and clinical studies.

NMDA receptor modulation by Esculetin: Investigating behavioral, biochemical and neurochemical effects in schizophrenic mice model

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Abstract:

Background: Schizophrenia is mental health disorder affecting 1% population worldwide, due to abnormality in transmission of neurotransmitters (mainly dopamine, serotonin and glutamate). Antipsychotic treatments available are associated with adverse effects, so the current approach of researchers is development of safer medication. Esculetin is a natural coumarin derivative, reported for its anti-inflammatory, anti-oxidant, anti-pathogenic, anticancer and neuroprotective activities. This study pursues to determine antipsychotic potential of esculetin in ketamine, NMDA receptor antagonist, induced schizophrenia animal models.

Material and methods: Ketamine 10 mg/kg i.p. was given to Swiss albino mice for once in acute study protocol and for 14 consecutive days in chronic study protocol to inducer group. Clozapine 1 mg/kg i.p. was administered as a reference standard antipsychotic drug. Esculetin 10 and 20mg/kg p.o. was administered for once in acute study protocol and from day 8th to 14th in chronic study protocol. Behavioral studies (stereotypy, locomotor activity, immobility, novel object recognition) were performed to access positive, negative and cognitive symptoms of schizophrenia. Moreover, biochemical assays were performed on homogenate of hippocampus, cortex and striata to evaluate antioxidant (SOD, CAT, GSH) and oxidant (MDA) levels. Furthermore, neurotransmitter levels i.e., dopamine, serotonin and glutamate were determined. Afterwards, ELISA was performed to evaluate levels of schizophrenia biomarkers AChE, BDNF, and proinflammatory cytokines (IL-6 and TNF-α) and NF-κB were also determined. Histopathological parameters of under hippocampus, cortex and striata were also assessed.

Results: Esculetin and clozapine significantly (***$p<0.0001$) altered ketamine induced behavioral symptoms and attenuated ketamine induced oxidative stress and neuroinflammation. Additionally, esculetin significantly (***$p<0.0001$) altered neurotransmitter (dopamine, serotonin, glutamate) levels. ELISA analysis depicts ketamine reduced BDNF levels in hippocampus, cortex and striata while esculetin significantly (***$p<0.0001$) increased BDNF levels in under study three parts of brain. Histopathological changes were seen in test groups. These results suggest that esculetin possesses potential therapeutic effects against ketamine induced schizophrenia. Therefore, esculetin could be a potential therapeutic agent against schizophrenia.

Keywords: Schizophrenia, Esculetin, Ketamine, Oxidative stress, Neuroinflammation, BDNF

Antimicrobial and anti-breast cancer activity of Methanolic extract of Citrullus colocynthis

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Abstract:

Citrullus colocynthis (C. colocynthis.) Schrad is a plant that belongs to the Cucurbitaceae family. It has a wide range of nutritional and therapeutic uses. It is stated in the literature that this plant has a wide range of pharmacotherapeutic properties such as anti-cancer, anti-oxidant, astringent, antiamoebiasis, hypotensive, sedative, refrigerant, antifungal, and antibiotic characteristics. This plant is useful as a novel drug against several cancer types. In this study, we visited various southern Punjab places after shadow dried and crushed into coarse particles. By using the soxhlet apparatus, we prepared the extract.The sample was prepared 20mg/ml in DMSO to screenthe cytotoxic activity of C. colocynthis against human breast cancer cells. The cytotoxic and anti-metastatic activities of C. colocynthiswere performed using MTT assay and wound healing assay, respectively. Citrullus colocynthis washed with clean water and dried by avoiding direct sunlight at room temperature. The dried material is homogenized to obtain a lumpy powder. The powder is stored in airtight brown plastic bottles. Almost 250g of powdered material subjected to soxhlet extraction using 2000 ml 80% methanol. Rotatory evaporator used to concentrate the powder and freeze drier is to solidify it. After that, by liquid-liquid fraction technique, the methanolic crude extract of Citrullus colocynthis was used with these three different solvents, i.e., n-hexane, chloroform, and methanol, to make a fraction library. In a molecular mechanism, we will examine the expression of two important proteins, i.e., PARP and Caspase-3, through Western Blotting. This plant is reported to have alkaloids, xanthones, quinones, coumarins, terpenoids, tannins, flavonoids, fatty acids, proteins, carbohydrates, and phenolic compounds. The phytochemical analysis will also be performed on C. colocynthis extracts.

Keywords: Citrullus colocynthis, phytochemical analysis, anti-microbial, anti-cancer

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Oncolytic measles virus encapsulated in thiolated Chitosan-based CD44 targeted delivery: A multi-parametric analysis of targeted oncolysis in a prostate xenograft model

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Abstract:

Background: The oncolytic measles virus (OMV) strain has demonstrated oncolytic activity, but a notable limitation is immune neutralization mediated by Natural Killer cells and macrophages in vivo. This study addresses this by encapsulating the measles virus in thiolated chitosan nanoformulation for sustained release and CD44-targeted delivery of virus-loaded nanoparticles through surface functionalization with hyaluronic acid. This approach is based on the overexpression of the CD44 receptor in prostate cancer. The oncolytic potential of these nanoparticles was evaluated in prostate cancer (PC3) cells and a xenograft model.

Methodology and Results: OMV-loaded nanoparticles were prepared using the ionic gelation method. Data on the high expression of CD44 in PC3 cells and its associated human antibody (HPA005785) were extracted from the Human Protein Atlas. The expression of antibodies, including Caspase-I, COX-II, NFκB, and TNF-α in prostatic adenocarcinoma (PRAD) compared to GTEx and TCGA data, was explored using GEPIA, along with their impact on overall survival and disease-free survival in PC patients' post-treatment. OMV-loaded nanoparticles exhibited higher cytotoxicity and cell viability, as determined by MTT and trypan blue assay. They also demonstrated dose and time-dependent cytopathic effects in PC3 cells, with a TCID50 of 4.2 compared to naked OMV. OMV-loaded nanoformulations showed 49.5% cell death, 54.3% cell cycle arrest at the G2/M phase, 8.1% at G0/G1, and 5.7% at the S phase, with significant mitochondrial membrane potential (MMP) at 50µg/ml, as assessed by flow cytometry (FACS). In vivo, xenograft analysis was conducted on Wistar rats immunocompromised using ketoconazole (10mg/kg), cyclosporine (30mg/kg), and 0.1 µg/ml of Amoxicillin. On day 7, WBC profiling confirmed immunosuppression and tumor implantation with PC3 cells. Histopathology of organs from OMV-loaded nanoformulation-treated rats revealed syncytia formation in tumors, and immunohistochemical analysis indicated a decrease in TNF-α, Caspase-1, and NLRP3, confirmed by ELISA. RT-PCR demonstrated a high viral copy number in tumor tissue and viral accumulation in the lungs and liver. Lower IFN-γ in nanoparticle-treated rats suggested suppression of OMV-loaded nanoformulation immunoreactivity by NK cell activity.

Conclusion: Our findings suggest that encapsulating the weak attenuated measles virus in thiolated chitosan and CD44 targeting improves the retention and sustained release of the virus in tumors compared to pure OMV. This approach enhances the oncolytic effect both in vitro and in vivo, overcoming immune neutralization

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Dietary and Sleep Patterns in Early-Stage Cancer Patients in various hospitals Across Rawalpindi and Islamabad Hospitals

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Abstract:

The study was aimed to determine the association between dietary and sleeping patterns in early-stage cancer patients across various hospitals in Rawalpindi and Islamabad. Cancer being a global health concern, but the intricate relationship between diet and sleep in cancer patients remains partially understood. A cross-sectional study among 250 cancer patients aged 18-75 were conducted. Diet quality using the Diet Quality Index (DQI) and sleep quality using the Pittsburgh Sleep Quality Index (PSQI) were assessed. Results revealed a slightly above-average diet quality and decent sleep quality, with a significant association between the two factors in early-stage cancer patients. Notably, the study indicated a higher prevalence of cancer in males, with age, Body Mass Index (BMI), and Waist to Hip ratio (WHR). The study results contribute to a better understanding of the lifestyle factors impacting cancer patients in the region.

Invitro Pharmacological Activity of Medicinal Plant Calotropis procera for its Antifungal and Anticancer Activity

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Abstract:

Background: Plants are used for the medicinal purpose from the ancient time. Calotropis procera is a widespread wasteland weed that has a wide range of medicinal uses. The purpose of this study was to test the antifungal and anticancer (MCF-7) activity of calotropis procera leaves.

Methods: The methanolic extract of calotropis procera leaves was prepared and the antagonist activity of the calotropis procera aqueous extract against Fusarium, Aspergillus and breast cancer cell line (MCF-7) was investigated. Through well diffusion method in vitro antifungal activity was performed.

Results: On the tested organisms the extract of Calotropis showed good effect. The extract of Calotropis showed maximum zone of inhibition against the fusarium, aspergillus and cancer cell line (MCF-7).

Conclusion: Methanolic extract of selected plant calotropis procera has potential against fusarium, aspergillus and cancer cell line (MCF-7).

Key words: Calotropis procera leaves; methanolic ectract;Fusarium; Aspergillus; Cancer cell line (MCF-7).

Harnessing the powers of AI in TB awareness seminar for sustainable healthcare advancements.

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Abstract:

Background: TB remains a significant burden on Pakistan. The step TB program emphasizes education and empowerment as part of "WHO END TB strategy". However, several studies reported a global deficiency in medical student's knowledge regarding TB and underscored a need for targeted educational initiatives.

Aim and Objective: The study aimed at developing an AI assisted methodology for preparation of TB awareness seminar and evaluating its effectiveness in increasing the knowledge of pharmacy students.

Methodology A single center quasi-experimental pilot study was conducted among first-year Pharm D students. A structured educational seminar regarding TB awareness was prepared using AI tools and validated by Professor of Clinical Pharmacy. The seminar was delivered to intervention group only. Self-structured validated questionnaires (pre-test/post-test quizzes) were administered to both intervention and control groups and data was collected from 28 and 23 students for intervention (pre-test and post-test) and control groups respectively. Data was analyzed by means of SPSSv26.0.

Results: The AI-created content covered various aspects of TB including the role of pharmacist in TB eradication, novel treatment options and resources available for TB support. The knowledge level was comparable between both intervention and control groups with mean scores (5.78 ± 1.63 vs 5.65 ± 1.81). There was significant increase in knowledge after intervention with mean post-test score vs pre-test scores (18.6087 ± 2.74258 vs 5.5652 ± 2.17059, $p < 0.001$). The percentage knowledge score before the seminar (pre-test score) was 50% for 4.3% of students whereas 25% for 27.1% of attendees and similar in case of non-attendees. However, 78.1% students had a knowledge score above 95% after the seminar.

Conclusion: The seminar enhanced knowledge of pharmacy students. Therefore, AI-assisted seminars could be utilized to foster TB eradication through education, a part of STEP TB program, thereby reducing its social and economic impacts and enhancing healthcare sustainability.

Protective effects of ginsenosides Rg1 and Rb1 against cognitive impairment induced by simulated microgravity in rats

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Abstract:

Microgravity experienced during space flight is known to exert several negative effects on the learning ability and memory of astronauts. Few effective strategies are currently available to counteract these effects. ginsenoside Rg1 and ginsenoside Rb1, the major steroidal components of ginseng, have shown potent neuroprotective effects with a high safety profile. The present study aimed to investigate the effects of Rg1 and Rb1 on simulated microgravity-induced learning and memory dysfunction and its underlying mechanism in the hindlimb suspension (HLS) rat model. Administration of Rg1 (30 and 60 μmol/kg) and Rb1 (30 and 60 μmol/kg) for two weeks resulted in a significant amelioration of impaired spatial and associative learning and memory caused by 4-week HLS exposure, measured using the Morris water maze and Reward operating conditioning reflex (ROCR) tests, respectively. Furthermore, Rg1 and Rb1 administration alleviated reactive oxygen species production and enhanced antioxidant enzyme activities in the prefrontal cortex (PFC). Rg1 and Rb1 also assisted in the recovery of mitochondrial complex I (NADH dehydrogenase) activities, increased the expression of Mfn2 and decreased the fission marker dynamin-related protein (Drp)-1expression. Additionally, Rg1 and Rb1 treatment increased the SYN, and PSD95 protein expressions and decreased the ratio of Bax:Bcl-2 and reduced the expression of cleaved caspase-3 and cytochrome C. Besides these, the BDNF-TrkB/PI3K-Akt pathway was also activated by Rg1 and Rb1 treatment. Altogether, Rg1 and Rb1 treatment attenuated cognitive deficits induced by HLS, mitigated mitochondrial dysfunction, attenuated oxidative stress, inhibited apoptosis, increased synaptic plasticity, and restored BDNF-TrkB/PI3K-Akt signaling. The present study highlights the use of ginsenosides Rg1 and Rb1 as novel candidate agents to counteract cognitive dysfunction induced by long-term spaceflight.

Epigenetic silencing of iron metabolism-related genes reduces the growth potential of hepatocellular carcinoma cells

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Abstract:

Hepatocellular carcinoma (HCC) ranks as the second most common cancer in men and seventh in women. While various lines of evidence propose that estrogen (E2) acts protectively against HCC, the precise underlying mechanism remains unclear. The question of how E2 disrupts the expression of iron metabolism-related (IRM) genes and whether this impacts its protective role against HCC remains unexplored. We postulated that E2 might disturb intracellular iron metabolism through inducing epigenetic modifications. In HepG2 cells, E2 treatment induced DNA methylation, resulting in the inhibition of ferritin heavy chain-1 (FTH1) and transferrin receptor-1 (TFRC) gene expression. This downregulation in HepG2 cells was rescued by demethylation treatment with 5-Aza-dC, although this effect was not observed in AGS or MCF7 cells. E2-treated HepG2 cells exhibited upregulation of DNMT3B, PRMT5, and methylated-Histone 4 (H4R3me2s). SiRNA knockdown of PRMT5 prevented E2-induced methylation of histone H4R3. Additionally, E2 treatment recruited PRMT5 and H4R3me2s on FTH1 but not on TFRC, as indicated by ChIP assay data. Knockdown of both PRMT5 and DNMT3B was necessary to counteract the inhibitory effect of E2 on FTH1, while only DNMT3B knockdown hindered E2-induced downregulation of TFRC. Ultimately, siRNA knockdown of FTH1 and TFRC in Hep-G2 cells resulted in a decreased intracellular labile iron pool, leading to cell cycle arrest and reduced cell growth and proliferation. These findings strongly suggest that E2 disrupts intracellular iron metabolism by inducing histone and/or DNA methylation events, silencing the FTH1 and TFRC genes, and these changes are associated with cell cycle arrest and diminished cell growth.

ANTIMICROBIAL, ANTIOXIDANT AND BIOFILM INHIBITION ACTIVITIES OF HONEY AGAINST STAPHYLOCOCCUS AUREUS AND ESCHERICHIA COLI

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Abstract:

Honey is a naturally occurring sweet substance created by bees, has garnered attention for its potential health benefits, including antimicrobial and antioxidant properties. This study aimed to assess the in-vitro antimicrobial activity, antioxidant potential, and biofilm inhibition capacity of different honey varieties against common human pathogens, Staphylococcus aureus and Escherichia coli. Various honey brands, including Laganese, Marhaba, Aftab Qarshi, and two local market brands (B.M and C.M), were collected and subjected to rigorous analysis. The antimicrobial activity was determined using the agar well diffusion method, measuring the zones of inhibition against S. aureus and E. coli. The antioxidant potential of honey was assessed through total phenolic content and (DPPH) radical scavenging activity. Additionally, the ability of honey to hinder biofilm formation and disrupt pre-formed biofilms was investigated. Results demonstrated that all honey varieties exhibited substantial antimicrobial activity against S. aureus and E. coli, with Laganese honey displaying the largest

inhibitory zones. The zone of inhibition ranged from 38mm to 31mm for S. aureus and 37mm to 24mm for E. coli, indicating strong bactericidal effects. Honey also displayed noteworthy antioxidant activity, with higher phenolic content and DPPH scavenging activity compared to the control, ranging from 83.53% to 66.89%.Moreover, honey effectively inhibited biofilm formation in both bacterial strains and demonstrated biofilm disruption potential, with percentages ranging from 50.63% to 49.19% for Staphylococcus aureus and 60.40% to 46.47% for E. coli.In conclusion, honey, particularly Laganese honey displayed notable antimicrobial efficacy against both S. aureus and E. coli. Furthermore, it displayed antioxidant properties and demonstrated the ability to inhibit and disrupt biofilm formation. These findings suggest that honey may hold promise as a natural resource for combating bacterial infections caused by Staphylococcus aureus and Escherichia coli.

Comparative Efficacy of Magnesium Sulphate and Dexamethasone/Metoclopramide in the Treatment of Acute Migraine Headaches

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Abstract:

Introduction: Migraine headaches represent a significant medical challenge, and there is ongoing debate regarding the effectiveness of current treatment options. This study aims to shed light on this controversy by evaluating the efficacy of commonly used treatments**.**

Objectives: The primary objective of this study was to compare the effectiveness of magnesium sulphate with the combination of dexamethasone/metoclopramide in providing pain relief in cases of acutemigraine headaches.

Materials and Methods: The study was conducted at the Department of Medicine in Benazir Bhutto Hospital, Rawalpindi, for six months, from November 25, 2015, to May 24, 2016. After obtaining their informed consent, we used a randomized controlled trial design for the research and recruited seventy patients who satisfied the inclusion and exclusion criteria. The patients were then randomly divided into two groups: Group A was given Magnesium Sulphate, while Group B was treated with dexamethasone/metoclopramide. The pain severity was evaluated using the NRS Scale at baseline and then again two hours post-medication by a resident doctor. The data were systematically recorded in a specially designed form, and a p-value of ≤ 0.05 was set as the statistical significance.

Results: The average age of participants was 29.77 ± 6.44 years, with no significant age difference between the groups. The study comprised 24 male (34.3%) and 46 female (65.7%) patients, with gender distribution being statistically similar across groups (p-value 0.66). The mean baseline NRS score was 8.21 ± 1.08, decreasing to 6.03 ± 2.03 after two hours. While there was no significant difference in baseline NRS scores between the groups (8.26 ± 1.04 for Group A and 8.17 ± 1.12 for Group B, p-value 0.741), Group A showed more significant pain relief after two hours (p-value 0.017). When data were stratified by age and gender, no age group showed a significant difference in efficacy, but significant results were observed in the female subgroup.

Conclusion: The study's findings suggest that magnesium sulphate is a more effective and faster-acting treatment for acute migraine headaches than the dexamethasone/metoclopramide combination.

Keywords: Migraine, Dexamethasone, Magnesium, Pain Relief.

Phytochemical study and Antioxidant activity of Solanum nigrum and Achillia millefolium in District Poonch Azad Jammu and Kashmir

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Abstract

Solanum nigrum is a therapeutic herb which belongs to Solanaceae family. It carries wide range of benefits like anticarcinogenic effects, free radical scavenging activity, antiinflammatory, hepatoprotective and antipyretic effects. Achellia millifolium belongs to Asteraceae family, having pharmacological effects like Hepatoprotective, Skinrejuvenating activity and neurodegenerative effects. The current study was aimed to carry out in-vitro anti-oxidants and phytochemical analysis of traditional herbs. Achellia millifolium and Solanum nigrum (black night shade) frequently available in district Pooch Azad Jammu and Kashmir. The fresh plants were collected from local hilly areas, authenticated by botanist from department of Botany University of Poonch Rawalakot and then dried in sun light for experimental activities. High-performance liquid chromatography (HPLC) technique was used for phytochemical analysis to isolate, detect, and measure each constituent in the extracts of both the plants. HPLC analysis of Achillia millefolium indicated the area under curve of 2.734 and 2.345 respectively. While HPLC analysis of Achillia millefolium indicated two peaks while for Solanum nigrum only one. Additionally Achillia millefolium has high concentration of Flavonoids (polyphenolic compounds) as compared to Solanum nigrum. For Solanum nigrum the area under curve was 3.734 and 3.345 respectively. Glycosides, tannins and proteins were found absent.Alkaloids, glycosides, flavonoids, terpenoids, phenols, tannins, saponins and phytosterols were the primary phytochemicals detected in Solanum nigrum and Achillia millefolium. Flavonoids were the most abundant phytochemicals present in these medicinal plants. Hydroalcoholic extract of arial parts of Achillia millefolium plant showed presence of Alkaloids, Saponins, Steroids, and fixed oils, while carbohydrates. Results showed Achillia millifolium showed maximum scavenging activity. The percentage of Achillia millefoliumis comparable with that of control. The plant showed 68.67%,75.69% and 86.55%scavenging activity at 75mMol,150mMol and 300mMol concentration and at 517nm absorbance respectively.Similarly, Solanum nigrum showed 76.8%, 81.52 %and 82.98% scavenging activity at75mMol, 15omMol and 300mMol concentration and at 517nm absorbance.

Keywords; Solanum nigrum, Achillia millefolium, Flavonoids, Gallic acid, Rutin, DPPH, Anti-Oxidant, HPLC

Oral Health Status and Oral Hygiene Practices Among Urban Slum Dwellers in Rawalpindi, Islamabad, Pakistan

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Abstract:

Poor oral hygiene is a major factor for oral diseases. Urban slums are recognized as a risk group population as the burden of oral diseases is highest among them. Objectives: To evaluate the oral health status of slums using Decayed, Missed, and Filled Tooth index. To evaluate the oral health status of slums using Community Periodontal Index for Treatment Need. Methods: A cross-sectional study was carried out on 385 urban slum people aged between 20 to 50 years. A convenient sampling method was adopted. Data were collected by structured questionnaire included information related to patient's knowledge, attitude, and behavior towards oral hygiene and interviewed by trained staff. Oral examinations were performed in line with WHO guidelines. After taking informed consent oral examinations were done by fresh graduate and DMFT and CPITN index were evaluated.Results: Study participants were assessed for attitude, knowledge and oral health behavior, 47% had Good Attitude, only 6% had Very Good Knowledge and < 1% had Very Good oral health behavior. Mean DMFT and CPITN score among Slums came 8.91 + 7.627 and 1.93 + 0.971 respectively. More than a third of the slums population required emergency levels dental treatments. Conclusions: The residents of slums have poor oral hygiene and high prevalence of dental caries. Low socioeconomic status, and lack of primary dental care programs and session are main reasons for poor oral health

Keywords: Oral Health, Urban Slums, DMFT Index, CPITN Index

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I did BDS from Army Medical College, and MCPS in Oral Surgery, and know studying Master of Science in Public Health from Armed Forces Postgraduate Medical Institute, National University of Medical Sciences Islamabad Pakistan, 26 research articles, know working as a Lecturer Shifa Tameer E Millat University Islamabad Pakistan

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Evaluation of tumor infiltrating lymphocytes (TILs)-derived MR1 restricted TCRs of breast cancer patients

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Abstract:

Adoptive cell therapy (ACT) has provided a better treatment option as cancer immunotherapy and it is classified as ACT with chimeric antigen receptor (CAR) modified T cells, ACT with tumor-infiltrating lymphocytes and ACT using T Cell Receptor (TCR) gene therapy. An important scientific turning point in the field of immunology was the discovery of the MHC class I-related molecule 1 (MR1) which exposes microbial antigens to mucosal-associated invariant T (MAIT) cells. Recently, a population of MR1-restricted T cells (known as MR1T cells) has been identified that does not recognize the microbial antigen like as MAIT cells. They may possess the characteristic of self-reactivity and preferentially recognition of tumor cells. In this study, we have analyzed MR1-restricted TCRs derived from tumor infiltrating lymphocytes of breast cancer patients. 5 TCRs-expressing T cell line responded to MCF7 breast cancer cell line in HLA-unrestricted fashion and secreted IL-2. We also transduced one of these TCRs into human peripheral blood mononuclear cells, which secreted IFN-γ and showed cytotoxicity to MCF7 cells. On knocking out MR1 gene from MCF7 cells, the reactivity of the TCR was significantly decreased while no inhibitory effect of MR1 ligand; Ac-6-Fp was observed on the TCR response.

We believe that this study will be a unique perspective in HLA-irrespective MR1-restricted TCRs for cancer immunotherapy.

Elevating Medicinal Herb Plant Authentication and Purity through DNA Barcoding: Harnessing the Power of ITS2 Amplification for Genetic Identification

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Abstract:

Global commercial interest in the identification of therapeutic plants has increased due to the significant risk of adulteration in the herbs. The main methods for genetically identifying herbs include DNA barcoding. The main advantage of this method is that it can determine the material's purity. This study focuses on the precise identification of three significant species of the Zingiberaceae using amplification and sequencing of the nuclear internal transcribed spacer region (a barcode region). The ribosomal nuclear ITS2 region of the chosen plant species, according to the results, exhibits 100% identity with the reference genome, indicating a high rate of species identification. According to the study's findings, the ITS2 standard barcode offers a revolutionary tool for identifying species, preserving genetic diversity, and safely using plant species with medical importance.

Role of nanotechnology in healthcare system

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Abstract:

Advancements in healthcare system are dependent on advancements in multiple fields of science. Nanotechnology is one of the factors which brought significant development in healthcare system. Nanomaterials have been widely used in detection and diagnosis of diseases i.e. cancer, these materials have also been playing key role in drug discovery and delivery. In this talk, the role of nanotechnology especially focusing on nanoscaled textile materials for disease diagnosis, drug discovery and targeted drug delivery will be discussed. Nanoscaled fibers are polymeric nanofibers which can be produced by various techniques, however electrospinning is simple and useful technique to fabricate nanofibers. Nanofibers can be further functionalized with nanomaterials or drug depending on desired application. For example nanofibers can be used as drug carriers for infectious diseases, wound care, antibacterial and antiviral face masks, bone regeneration, and skincare applications. Similarly, it is expected that functionalized nanofibers will soon be utilized for early stage detection of cancer. There have been significant development is nanofibers based biosensors which is way forward to the cancer detection. In conclusion, nanotechnology has been an impactful technology helping medical experts in dealing with complex problems, and will further ease the way towards improved healthcare system.

HFD and Alloxan induced hepatic insulin resistance associated PCSK9 mRNA expression and inhibition by Gymnema Sylvestre leaf extract in white albino rats

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Abstract:

Background: HFD and alloxan induced Insulin-Resistance(IR) associated with PCSK9 mRNA expression and effect of Gymnema sylvester extract is unknow.

Methods: White albino rats were divided in groups A,B&C. Group-A was given standard chow feed, group B&C were given HFD for one month and alloxan 60mg/kgbw was administered to induce insulin resistance. IR was confirmed with glucose tolerance test. Group A&B were sacrificed and PCSK9 mRNA was analyzed through qRT-PCR in hepatic, pancreas and adipose tissue. Group-C was administered GS leaf extract 200mg/kgbw for one month. Then group-C was sacrificed and PCSK9 mRNA in three tissues were analyzed through qRT-PCR. Blood biomarkers were also analyzed. Active compounds of GS were screened and analyzed in-silico by Swiss-ADME and docked by auto-dock vina against target protein PDB-ID-6U26. Results were analyzed using t-test and significance values was <0.05.

Results: HFD and alloxan induced IR was associated with upregulation of PCSK9 mRNA expression in hepatic (P<0.0001) (18S-P<00001), pancreas (P<0.009)(18S-P<0.843) and adipose tissue (P<0.013)(18S-P<0.0001). GSE treated group C (group-C) showed Serum glucose (mg/dl-Mean±SD) 181±8.14 compared to Group B 235±22 mg/dl(P<0.0001). Cholesterol 135.16±18.43 versus 244±11.54

mg/dl(P<0.0001), LDL was 71.5±9.23 versus 119.5±36.4mg/dl (P<0.0001), HDL was 57±5.8 versus 35±4.1 mg/dl (P<0.001), ALT was 43.16±6.61 versus 71.16±4.94IU/L(P<0.0001), AST was 40.83±6.71 versus 59.16±6.71IU/L(P<0.0001), ALP was 135.83±7.22 versus 227.16±6.84IU/L(P<0.0001) respectively. In-silico and docking results showed compound 101, 113-115 and 119 showed binding energies of -8.9,-9.2,-8.8,-8.8,-9.3 respectively.

Conclusion: HFD-alloxan induced IR was associated with PCSK9 mRNA upregulation and treatment with GS extract 200mg/kg-bw downregulated PCSK9 mRNA expression in hepatic and adipose tissue.

Using the PRECEED-PROCEED Logic Model for Designing Education Material to be Used as Nutritional Tool in a Randomized Clinical Controlled Trial

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Abstract:

Introduction: University students suffer from academic stress and poor dietary habits. Both of these mutually reinforce each other. There is an urgent need of addressing these. Evidence-based and culturally acceptable educational materials have been shown to be an effective tool in promoting healthy eating. Objective: Design printed educational material on healthy eating using Intervention Mapping for a longitudinal study planned to change dietary behavior of university students for the adaptation of Mediterranean dietary patterns for better academic stress management. Methods: The Intervention Mapping methodology was used with the steps 1) needs assessment, 2) objective matrices, 3) theoretical methods and 4) design. Results: The PRECEDE Logic Model was built, the matrix of change objectives based on the determinants knowledge, identification, availability and support and information processing was used as a theoretical method. An 11-page education material in the form of a booklet was developed with content, images, text and writing based on the Intervention Mapping steps. Conclusions: The Intervention Mapping process provided evidence-based and participatory input for the design of the educational material, which is intended to be used as an intervention tool to change the dietary behavior of university students towards more healthy Mediterranean dietary options for better management of academic stress.

Exploring the effects of mental health and nutrition intervention on diet and functioning in university students; A non-randomized controlled trial

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Abstract:

Background/Objectives: There is strong epidemiological evidence that poor diet is associated with psychological distress (depression, anxiety, stress). The purpose of this study is to find out the

prevalence and risk factors of psychological distress in university students. Examines the impact of nutrition on mental health and evaluates the efficacy of nutritional and psychoeducational interventions.

Methodology: The University of Haripur Centre for Counselling and Social Wellbeing (UOH-CCSW) in Khyber Pakhtunkhwa, Pakistan, conducted the interventional trial in September 2023, and 120 individuals were recruited from here. Participants eligible for the study, encompassing both males and females aged between 18 and 35, demonstrated moderate levels of depression, anxiety, and stress as assessed by the Depression, Anxiety, and Stress Scale (DASS-21). The study exploited the DASS-21, Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), Rosenberg self-esteem scale, and a diet quality questionnaire for outcome measurements. The intervention comprised six expert-led sessions addressing various psychological and nutritional problems. The data were analyzed using SPSS 22.0.

Results: The study participants, who were between the ages of 18 and 25, showed an alarming prevalence of depression (72.2%), anxiety (82.1%), and stress (60.8%). Risk factors such as gender (female), 1–3-hour day sleep, drug addiction, lack of exercise, taking supplements, family medical history, and smoking status showed a p-value<0.05 associated with psychological distress in university students. Psychoeducation and dietary behaviour change education interventions showed significant improvements in mental health, diet quality, and changes in anthropometric measurements. Psychoeducation combined with dietary behaviour change resulted in significant improvements (p-value<0.05) in mental health diet quality, and anthropometric measurement showed a synergistic effect.

Conclusion: The study concludes that there is an alarming prevalence of psychological distress among university students. Intervention showed a significant reduction of psychological distress and improved wellbeing in university students. Dietary behaviour change psychoeducation is a successful strategy for promoting a balanced diet and mental well-being.

Keywords: Depression, anxiety, stress, self-esteem, wellbeing, body weight, body fat, body muscle, psychoeducation, dietary behavior change

Trial Registry No. ACTRN12623001359628

Clinical efficacy and safety assessment of Alsareen capsule for the management of H. pylori infection

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Abstract:

Background: More than 50% of people worldwide have stomach infections caused by Helicobacter pylori. The World Health Organization has designated H. pylori as a Class 1 carcinogen. In Pakistan, it has a seroprevalence of over 58% and widespread in populations without symptoms. A Unani Medicine, Hamdard Alsareen, developed by Hamdard Research Center –HRC has been used for gastrointestinal disorders at Hamdard Matabs for years.

Methods: Acute oral toxicity study was performed to assess the safety of Alsareen. This study was conducted in compliance to OECD guidelines #423. Alsareen doses of 5, 50, 300, 2000 & 5000mg/kg body weight. Animals are observed individually for 14 days. An open labelled, single arm, clinical

study, based on ICH-GCP E6 guidelines, was conducted at SUMMH. Participants having complain of heart burn, nausea, vomiting, anorexia, abdominal pain and relevant gastrointestinal symptoms were screened for H. pylori.

Results: The results obtained from the animal study on single-dose oral administration up to 14 days of observation period show no physical or behavioral changes. Hamdard Alsareen showed no signs of toxicity. 50 subjects were enrolled for the study, ranging from 15 years to 55 years. Out of 50, 32 subjects (64%) were males. The prevalent symptoms observed in patients with H. pylori infection include 86% experiencing heartburn, 46% reporting indigestion, 40% facing nausea, 34% suffering from abdominal bloating, and 32% dealing with anorexia. Hamdard Alsareen potentially shown an eradication rate of 88%.There is also no significant difference in compliance, efficacy, or tolerability.

Conclusion:The present results, the efficacy and safety of Hamdard Alsareen in eradicating H. pylori, thus preventing or paving way for healing of peptic ulcer. These findings showed that Hamdard Alsareen have the potential for further development as a safe and effective alternative/complementary to conventional medication in treating H. pylori & its related gastrointestinal disorders.

Antineoplastic studies and Characterization of biosynthesized silver nanoparticles of Oxystelma esculentum leaves extract

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Abstract:

The conventional therapies for cancer have significant side effects such as bone marrow depression, alopecia, etc., leaving the patient functionally and psychologically handicapped, subsequently leading to social isolation. The current chemotherapeutic agents fail to meet the ideal requirements for cancer treatment. Silver nanoparticles, especially green synthesized, have recently attracted remarkable interest for use in cancer nanomedicine. Plants contain different important phytochemicals that can be used as a potential treatment for various ailments, including cancer. The aim of this study is to synthesize silver nanoparticles from the aqueous leaf extract of Oxystelma esculentum and to investigate its anticancer activity on cancer cells. The synthesized AgNps were characterized using UV-Vis spectroscopy, Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), scanning electron microscopy, and energy dispersive X-ray analysis (EDX) techniques. The absence of cytotoxicity against normal human fibroblasts and blood erythrocytes confirms the biocompatible nature of green-synthesised AgNps. In vitro anticancer assays against liver (Hep G2), breast (MCF7), and cervical (HeLa) cancer cell lines, respectively, through the MTT assay confirm its potent anticancer action. The results of the present study give experimental proof that Oxystelma esculentum-mediated green synthesized AgNps could serve as a promising anticancer agent to overcome the limitations of existing conventional cancer chemotherapeutics.

Impact of Cognitive Behavioral Intervention on adherence and quality of life of epileptic patients

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Abstract:

Impact of Cognitive Behavioral Intervention on Adherence and Quality of Life of Epileptic Patients.

Background: Epilepsy is a chronic neurological disorder affecting millions of individuals worldwide, often requiring long-term medication management to control seizures. Despite the availability of effective anti-epileptic drugs (AEDs), medication adherence remains a significant challenge for many patients, leading to inadequate seizure control and reduced quality of life.

Objective: The aim of the study was to evaluate the impact of pharmacist-led cognitive behavioral intervention on adherence, reduction in ADRs, Seizure's frequency, medication related problems (MRPs) other than ADRs and overall quality of life of epileptic patients.

Methodology: The study was done as a randomized single-blind two-arm clinical trial. Participants were randomly divided into two groups and were provided with basic and advance pharmacist-led Cognitive Behavioral intervention (CBI) including counselling about their medication schedules. Pre-validated questionnaires i.e., MARS-10 and QOLIE-31 were used to evaluate adherence and quality of life. Patient satisfaction regarding pharmacist intervention was evaluated at the end of the trial.

Results:A total of 385 patients, 191(49.6) were in basic group while 194(50.4) were included into the advance group, base line adherence and QOL score of patients were 5.38 + 0.58 and 71.59 + 0.48 in basic group, 5.53 + 0.55 and 71.44 + 0.45 in Advance group. After 3-months patient's adherence and QOL scores were evaluated which showed an increase in both the groups after the intervention to 7.02 + 0.76 and 74.31 + 0.39 in basic group and 7.72 + 0.75 and 76.8 + 0.39 in advance group, respectively ($p<0.0001$; RM-ANOVA. The study shows that the pharmacist-led cognitive behavioral intervention is a successful technique to help control seizure episodes and increase adherence as well as quality of life of the patients. Moreover, as the advance group showed better adherence and QoL, this proves that more the pharmacist involved in patients care, better the outcomes are.

Conclusion: Pharmacist led CBI approach can be adopted as an effective intervention method for improving epileptic patients' adherence and quality of life.

In-Vitro Evaluation of Anticancer Activity of the Selected Indigenous Medicinal Plants using Cell lines

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Abstract:

Cancer, has now become a widespread disease in developing and developed countries. The disease poses a threat to public health and is the root of morbidity and death. Acute myeloid leukemia (AML) is a complex disease with a poor overall rate of survival. The current induction therapy for AML has

not changed significantly in the last 30-40 years, and it has serious adverse effects. Consequently, the development of more personalized therapies and less harmful medications is required. There is a need to make anti-leukemic drugs that are more efficacious non-toxic, and cost-effective, both from natural sources and synthetic compounds.

In order to give scientific validation for its traditional uses as a medicine, the current study was designed to assess the methanolic crude extract (MCE) of two plants for pharmacological activities. In this present study, two natural plants were investigated for their anti-leukemic activity against FKH1 cell line for the treatment of AML. Chenopodium album and Caralluma tuberculata showed anti-cancerous and cytotoxic effects against FKH1cell line at different concentrations.

The methanolic extracts of Ca. tuberculata and Ch. album were tested for their inhibitory activity in FKH1, a human myeloid leukemia cell line using the MTT colorimetric assay. The cytotoxicity results demonstrated that the plants extract inhibited growth in the tested cancer cell line, although at various intensities ranging from mild to high growth inhibition. The results showed that the methanolic extracts of the two plants had potential cytotoxic and anti-leukemic activity on FKH1 cell line.

Chenopodium album and Caralluma tuberculata exhibited promising anti- leukemic results in different concentrations. Ch. album showed very good cytotoxic results even at lower concentrations compared to Ca. tuberculata. Both the plants can work as an excellent drug against AML but it needs further analysis and investigations for their safer use.

Impact of Clinical pharmacist intervention on medication adherence and its association with clinical outcomes in chronic kidney disease in Islamabad.

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Abstract:

TITLE:Impact of Clinical pharmacist intervention on medication adherence and its association with clinical outcomes in chronic kidney disease in Islamabad .

Background: Chronic kidney disease (CKD) is a serious public health concern across the world due to its high incidence, morbidity, death, and economic burden. Medication adherence is important for slowing the progression of CKD

Objective: The aim of the study was to evaluate the effectiveness/impact of a clinical pharmacist intervention program on medication adherence, health related quality of life along with other clinical outcomes in chronic kidney disease.

Methodology: A 4-month randomized single blind interventional trial was performed to assess the benefit/effectiveness of a clinical pharmacist intervention in CKD patients. We used the MARS-10 and the RAND-36 tool to measure adherence and health-related quality of life, respectively.

Results: A total 129 participants were recruited, out of which 70 (54.3%) respondents were allocated to basic group and 59 (45.7%) respondents were allocated to the advance group through simple randomization. There was significant improvement in health related quality of life and medication

adherence at second as well as third visit ($p<0.0001$). Moreover, there was also significant improvement in systolic and diastolic blood pressure, suggesting better control of blood pressure with pharmacist's intervention. Multiple linear regression analysis showed that there was significant positive effect of intervention in advance group as compared to basic group ($B= 0.431$; $p =0.03$). Moreover, our model shows that the adherence score increased over subsequent follow-ups ($B=2.606$; $p<0.0001$). We also found that there was significant improvement in RAND-36 score at subsequent follow-up ($B=327.013$, $p<0.0001$), however, there was no impact of groups i.e. Basic or advance on RAND-36($p = 0.142$).

Conclusion: In conclusion, specialized interventions or clinical pharmacist role leads to, significant improvement in medication adherence and health related quality of life in chronic kidney disease patients

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Clinical research the epitome of evidence-based medicine break through ich-gcp compliant Phase III trial of Unani Medicine

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Abstract:

The visionary founder of Hamdard Pakistan, Shaheed Hakim Muhammad Said was the pioneer in modern research of Unani medicine. Teaming with his elder brother late Hakim Abdul Hameed, he incorporated latest development & testing techniques for analysis of single ingredients, product formulation and recording clinical data. They published their processes & finding for generations to come.

Following the lead, Hamdard Research Center, a division of Hamdard Laboratories (Waqf) Pakistan –HLWP, is conducting all phases of research on Unani formulations under the WHO – DRAP guidelines to develop evidence based knowledge on their safety and efficacy. These include:

A. PRE CLINICAL PHASE

1. Formulation standardization
2. Toxicity studies, Acute – Sub Acute - Chronic
3. Nutritional fact studies
4. Phytochemical testing
5. Ethical Review Board approval, Institutional & National

B. CLINICAL PHASE

1. Phase I & II
2. Phase III
3. Phase IV, Pharmacovigilance

FIRST PHASE III TRIAL – VISION TO REALIZATION

The objective was to

1. Develop evidence-based data for the safety and efficacy of the product.

2. Seek approval of claimed higher level of indications from Regulators
3. Provide a safer and effective alternative to the prescribers for patients, globally

Starting First ICH-GCP E6 compliant Phase III clinical trial on Unani product was a long journey of learning and understanding the process.

1. We combined our will with the knowledge & experience of renowned DRAP approved Clinical Research Organization, Dimension Research.
2. All pre-clinical tasks were completed with collaborating institutional labs including HEJ & PCSIR.
3. The study was designed under guidance of senior professors of medicine at DOW & KMDC
4. By the grace of Allah SWT, it was approved by National Bioethics Committee an arm of National Institute of Health.
5. The study is now underway at Hamdard University Hospital.

Detection of Antioxidant Activity of Citrus Limon Plant, A Comparative Study.

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Abstract:

Citrus limon (lemon) belongs to the Rutaceae family and has great therapeutic applications. The chemical ingredients of C. limon have been used in the formulation of several ethnic herbal medicines for centuries due to their potential health advantages. This study uses the 2,2-diphenyl 1-picrylhydrazyl (DPPH) radical scavenging assay, a popular technique for evaluating the free radical scavenging ability of natural compounds, to investigate the antioxidant activities of extracts of Citrus limon leaves using hydro ethanol as the extraction solvent. To obtain crude extracts, fresh lemon leaves were gathered from different locations and extracted with a hydroethanolic solvent (70% ethanol). By using spectrophotometry, the radical scavenging activity/percent inhibition of DPPH radicals was evaluated. The results showed that lemon leaf extracts have strong antioxidant capabilities. The antioxidant properties of lemon leaf extracts highlight their potential as sources of antioxidants in nature. This study adds to the expanding body of research that supports the health-promoting qualities of lemon leaves and their prospective use in pharmaceutical, nutraceutical, and functional food formulations. Additional research into the mechanisms of action and the separation of particular bioactive chemicals from lemon leaves may offer insightful information for their inclusion in antioxidant-rich products, ultimately enhancing human healthand well-being.

Effect of CYP2D6 Variant on Paroxetine Response in a Local Cohort with Major Depressive Disorder

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Abstract:

Introduction: This study aimed to investigate the effect of CYP2D6 polymorphisms on paroxetine response in patients with Major Depressive Disorder.

Methodology: A cohort of 50 patients with MDD were recruited who were then treated with paroxetine for 8 weeks treatment duration. The severity of clinical symptoms and side effects experienced by participants were assessed using the Hamilton Depression Rating Scale (HAMD-17) and LUNSERS scale at baseline and later at weeks 3 and 8 of the treatment. Genotyping of two specific single nucleotide polymorphisms (SNPs) in the CYP2D6 (*10) variant, namely 1038 C>T (rs1081003) and 100C>T (rs1065852), was performed using Tetra-Arm PCR followed by gel electrophoresis.

Results: At the second follow-up, significant reduction in HAMD-17 scores was observed among responders. They also experienced mild side effects during the second follow-up assessment compared to their baseline. On the other hand, non-responders did not show significant reduction in symptoms or side effects. The study results indicated that individuals with the homozygous TT genotype of rs1081003 and the CC and CT genotypes of rs1065852 showed a higher frequency of positive treatment response. These individuals experienced a notable decrease in symptoms and side effects, as measured by the HAMD-17 and LUNSERS rating scales.

Conclusion: In summary, our findings revealed a significant association between the CYP2D6*10 variant polymorphism and the therapeutic response to paroxetine in patients with MDD.

Impact of Antipsychotic Drug-Drug Interactions on Patient Adherence and Quality of Life in Twin Cities

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Abstract:

Impact of Antipsychotic Drug-Drug Interactions on Patient Adherence and Quality of Life in Twin Cities Patients taking antipsychotic medicines frequently experience drug-drug interactions (DDIs) that can affect their medication adherence and can have long-lasting effects on a patient's quality of life. This study aims to illustrate the prevalence of potential drug-drug interactions (DDIs) related to antipsychotic drugs and how they affect patient adherence and quality of life as a result. This cross-sectional study involved 259 individuals receiving treatment with at least one antipsychotic medication for psychiatric illnesses between June and August of 2023. The adherence of patients was evaluated by the MARS-10 tool and the quality of life of psychiatric patients was evaluated by the WHOQOL-BREF

tool. The study finds a high frequency of potential DDIs (pDDIs), with 98.4% of prescriptions exhibiting at least one potential interaction. Category C interactions were the most common in 93.43% of the prescriptions. The combination of quetiapine and sertraline potential interaction was the most common (10.42%) documented. The patients were majorly diagnosed with anxiety (25%). The most common drug-disease interactions were dementia (36.67%). Moreover, the drug-disease interaction was a statistically significant negative predictor for adherence of the patient (F [7,247] =2.281 (p= 0.029, R2 = 0.061), and adherence was discovered to be significantly correlated with life quality (F [1,255] = 15.448 (p=0.000, R2 =0.057). The study's findings highlight the concerning frequency of antipsychotic medication interactions, especially when combined with medications like quetiapine, and sertraline importance of close therapeutic monitoring, particularly when CNS depression and possible drug-disease interactions like dementia are involved. The results underline how important it is for drug-disease interactions to be considered when predicting patient adherence and overall quality of life. This indicates that better management techniques are desperately needed in the context of psychiatric care.

Revolutionizing Cancer Diagnostics: Advanced Sensor Technologies for Early Detection and Tailored Treatment

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Abstract:

In the quest for enhanced cancer diagnostics, this research explores the paradigm-shifting potential of advanced sensor technologies. The imperative for early cancer detection has spurred the development of sensors capable of discerning minute molecular and cellular alterations associated with the onset of malignancies. This abstract encapsulates the multifaceted contributions of these sensors in reshaping the landscape of oncological diagnostics.

At the core of this innovation lies the pursuit of heightened sensitivity and specificity in detecting cancer biomarkers. The engineered sensors aim to transcend current diagnostic limitations, enabling the identification of subtle changes indicative of cancer initiation before symptoms manifest. This transformative approach not only facilitates early diagnosis but also lays the foundation for personalized treatment strategies.

The envisioned impact is a revolution in cancer care, where clinicians armed with sensor-derived insights can tailor interventions with unprecedented precision. The potential benefits extend beyond early detection, encompassing minimally invasive diagnostic methods and real-time monitoring of treatment responses. Moreover, the economic implications of streamlined and cost-effective diagnostics contribute to the accessibility of these technologies on a global scale.

As sensor technologies continue to evolve, this research envisages a future where early-stage cancer diagnoses are routine, and treatment plans are dynamically adjusted based on real-time, sensor-generated data, thereby fostering a new era of precision medicine in oncology

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ADVANCED INNOVATION IN PHARMACEUTICAL SHAMPOO BY REPLACING SODIUM LAURYL SULPHATE AND PARABENS WITH LESS HARMFUL INGREDIENTS

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Abstract:

Shampooing is very common treatment for hair.It is true that if you take care of your hair by applying shampoo and conditioner regularly on to your scalp and on the hair roots, then your hair will keep on shining for a long time. The hair gets its oil from sebaceous glands that secrete oil called sebum, which keeps the hair moisturized. Moisturized hair is less likely to break or look dry and frizzy.Shampoos are primarily a product use to clean hair and scalp to remove dirt.But these shampoos contain some harmful ingredients that are causing harm to our hairs.As we all know nowadays people are getting more worried about their hairs as it increases beauty.The increasing popularity of herbal and natural shampoos can be attributed to growing apprehensions surrounding the potential detrimental effects of synthetic ingredients. Consumers are increasingly seeking alternatives that not only effectively cleanse but also prioritize safety for both the scalp and the environment. Within this context, the use of decyl glucoside emerges as a noteworthy choice as a foaming agent due to its non-ionic surfactant properties. This selection aligns with the ongoing shift towards ingredients that deliver optimal results while minimizing harm.

Synthetic ingredients in conventional shampoos, notably sodium lauryl sulfate and parabens, have been associated with scalp and skin irritation, cataract formation, and even carcinogenic risks. Acknowledging the significance of foaming in consumer satisfaction, there is a delicate balance to strike between providing an effective product and avoiding harmful components. Decyl glucoside, recognized for its foaming power and good tolerance, presents a viable solution in creating shampoos that fulfill consumer expectations while mitigating potential health risks.This abstract highlights the pivotal role of ingredient choices in formulating hair care products, emphasizing the importance of prioritizing consumer well-being and environmental impact. The research advocates for a paradigm shift towards ingredients like decyl glucoside, rather than sodium lauryl sulphate & fostering a new era of shampoos that marry effectiveness with safety in response to evolving consumer preferences and concerns.

Herbs in management of Diabetes

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Abstract:

Diabetes is a metabolic disorder characterized by impaired insulin function and elevated blood glucose levels that affect millions of people worldwide. Diabetes can lead to serious complications such as cardiovascular disease, kidney failure, nerve damage and blindness. Prevalence of this disease is rising to 12.2% globally. There are numerous undesirable health behaviors that are responsible for the globally increase in the occurrence of diabetes. Several risk factors are involved in the actual beginning of the disease including physical in-activity, poor nutrition, alcohol, and smoking. Diabetes is one of the leading causes of death globally. A holistic approach to diabetes management includes a healthy diet, regular exercise, proper medication, proper monitoring of blood sugar levels and use of herbs. Herbs are the plants that have medicinal, culinary, or aromatic properties. Herbs have been used for thousands

of years in the treatment and prevention of certain diseases including diabetes due to its ethinicity. Herbs including fenugreek, moringa leaves, green tea, aloe vera, turmeric, cinnamon, garlic, ginger and curry leaves are rich in polyphenols that help in the managing hyperglycemia.

Key words: Ethnomedicine, hyperglycemia, polyphenol, antioxidants, functional foods, holistic approach

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ASSOCIATION OF MEDITERRANEAN DIET WITH THE RISK OF BREAST CANCER- A COMPREHENSIVE REVIEW

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Abstract:

The prognosis of breast cancer is greatly affected by the lifestyle and dietary pattern of the individuals. An unhealthy dietary pattern increases the risk of breast cancer and worsens the symptoms in already affected patients. On the other hand, a healthy lifestyle results in a decreased risk of breast cancer as well as its recurrence. However, there are many research studies that show the protective role of different nutrients, foods, and dietary patterns. The objective of the current review was to determine the role of the Mediterranean diet and its components in the prevention of breast cancer. Literature from 2019 to 2024 was reviewed using databases such as Google Scholar, PubMed, and Science Direct. The search results showed 2830 articles to which inclusion and exclusion criteria were applied. Finally, n = 30 articles were included in this review paper. The results of the review showed an inverse association of Mediterranean diet with the risk of breast cancer and reported the various nutrients used frequently in the Mediterranean diet to be protective against the risk as well as recurrence of breast cancer, especially in post-menopausal women. More research studies are needed though to warrant this association.

Keywords: Breast Cancer, Mediterranean Diet, Lifestyle, Dietary Pattern

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Mechanisms, Challenges, And Future Prospects Of The Oncolytic Virotherapy: A Comprehensive Review

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Abstract:

Oncolytic viruses (OVs) are viruses capable of destroying tumor cells. They selectively invade and multiply inside tumour cells, causing those cells to rupture and release newly built viruses. These viruses cause the body's immune system to target the tumour and any adjacent tumour cells that have spread

throughout the body by infecting them. This therapy have gained attention as a promising cancer-fighting agent due to recent advances in virology and molecular biology. Additionally, clinical investigations have shown that oncolytic viruses can eliminate cancer cells that are resistant to traditional treatments, leading to over 100 clinical trials exploring the possibility of combining them with other therapies for better efficacy. Oncolytic virotherapy is currently undergoing phase I-III clinical studies to evaluate its potential as a new cancer treatment. With advancements in gene therapy and viral therapy, several viral families have been developed that can exclusively replicate in tumor cells. While T-VEC is currently the only FDA-approved oncolytic virus. However, extensive research has shown that OVs are only partially effective in treating solid tumours. In this review article the mechanism of action of oncolytic viruses (OVs), their delivery routes, challenges encountered in oncolytic virotherapy, current developments, and efficacy of OVs when used in combination with other cancer treatments are discussed. The article also provides insights into the prospects for the future of oncolytic virotherapy.

ASSESSMENT OF SOCIO DEMOGRAPHIC, DIETARY AND LIFESTYLE FACTORS LEADING TO OBESITY IN FEMALE UNIVERSITY STUDENTS: A CROSS-SECTIONAL STUDY

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Abstract:

Introduction: Due to the large prevalence, the World Health Organization (WHO) declared overweight and obesity as a global epidemic. Developing counties especially in Asia have been facing serious public health problems including obesity; leading to high disease burden and mortality. According to the World Obesity Federation the National Obesity Risk is 6.5 out of 10. Leading to non-communicable diseases like cardiovascular diseases, diabetes and cancer. The main factors include lack of dietary diversity, poor dietary choices, food insecurity, poverty, socioeconomic status.

Aim and objective: To assess the socio demographic, dietary and lifestyle factors leading to obesity in female university students.

Methods: A cross-sectional study was conducted from September to December 2023. A sample of 100 female students aged between 18-25 years were selected by convenient sampling technique from National university of medical sciences, Islamabad. Self-constructed questionnaire of 35 questions was generated to collect data about sociodemographic, anthropometric, diet history and food frequency. Data was analyzed using Descriptive analysis and Chi-square test through SPSS version 20.

Results: Out of 100 participants, 87% living in urban setting and 49 % hostiles. Nutritional status assessment of female students showed that 16 % ,10 % ,26% and 48 % female students were under weight, overweight, were obese and normal weight. Out of 100 females 38% were doing Physical activity > 25 min and 26% never did exercise. Food patterns of female students was less than RDA. Only 33%, 35%, 36%, 27%, 23% were consuming fruits, vegetables, dairy, dry fruits and meat respectively daily. 36%, 60% and 7% of girls consumed bakery products, juices, carbonated drinks

regularly respectively. Fast food consumption was seen as 13%. About 15% were using ghee in cooking and 35% were using refined wheat flour at home. Only 31% participants do not know about My Plate concept.

Conclusion: The analysis revealed that age and marital status did not show significant effects on BMI. Consumption of all female students from all food groups were below 50%, less than RDA. While consumption of bakery products, juices, carbonated drinks and fast food was high. Majority of them (95%) were using sugar as sweetener in their beverages. However, approximately 26% did not participate in any physical activity.

Keywords: sociodemographic status, lifestyle factors, over nutrition, diet history, food frequency questionnaire, metabolic diseases, obesity.

Exploring the therapeutic potential of the Mediterranean diet in diabetes management

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ABSTRACT:

Diabetes mellitus, a prevalent and chronic metabolic disorder, poses significant challenges for individuals and healthcare systems worldwide.In a 2023 research study, Pakistan was ranked as number one in terms of diabetes.In recent years, the role of diet in managing diabetes has gained prominence, with the Mediterranean Diet (MD) emerging as a promising avenue for therapeutic exploration.Diabetes is a chronic condition that affects the body's ability to regulate blood sugar levels. Proper management is crucial for overall health.Individuals with diabetes often require careful monitoring of their diet, physical activity, and medication to maintain stable blood sugar levels.Mediterranean diet may offer significant benefits for individuals with diabetes.Mediterranean diet can positively impact insulin sensitivity.The Mediterranean diet's influence on diabetes management is attributed to its anti-inflammatory properties and high concentration of antioxidants.Anti-Inflammatory Effects;Omega-3 fatty acids and polyphenols in the diet may help reduce inflammation.Antioxidant Benefits;The diet's abundance of fruits, vegetables, and olive oil provides a rich source of antioxidants, offering protective effects against diabetic complications.When compared to other dietary approaches, the Mediterranean diet has shown favorable outcomes in improving glycemic control in individuals with diabetes.It stands out for its emphasis on whole, nutrient-dense foods and its potential to support overall well-being.Mediterranean Diet;Emphasizes fruits, vegetables, whole grains, and healthy fats.Low-Carb Diet;Restricts carbohydrate intake to manage blood sugar levels.Standard Diabetic Diet;Focuses on balanced meals and control portions. Adopting the Mediterranean diet involves incorporating a wide array of fresh, colorful foods into daily meals.Include consuming plenty of vegetables, lean proteins, whole grains, and healthy fats such as olive oil and nuts.Some challenges in implementing the Mediterranean diet for diabetes management may include accessibility to certain foods, cultural preferences, and socioeconomic factors. Healthcare providers should consider individual circumstances to ensure successful adoption of this dietary approach.The therapeutic potential of the Mediterranean diet in diabetes management opens avenues for further exploration and research.

Plants effective against hypertension

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Abstract:

Cardiovascular diseases are highly very common in human history. Hypertension is a disease that is very common and has mortality rate twice than half of population. It is considered as one of the major risk factor for cardiovascular diseases and stroke. Medicinal plants have always been a way to cure many common and prevailing diseases due to their useful phytochemicals. In case of hypertension many plants are found effective against raised blood pressure. There are different factors causing hypertension and different medicinal plants can be used depending on the cause of hypertension. Moreover drugs present for hypertension have many side effects where as medicinal plants are healthy and natural source of medicines with no such dangerous and prevailing side effects. Some of the best plants for the treatment of hypertension are given in this review article. The purpose of this study is to give a basic overview for the most effective plants against hypertension.

Keywords:

Hypertension, Ethan botany, Medicinal plants, cardiovascular diseases.

The Road Ahead: Center for Research in Unani Medicines Informatics

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Abstract:

According to WHO, 70% of the world population relies on traditional medicines. WHO emphasized the need to preserve such indigenous medical knowledge. That will lead towards standardization of its terminologies and formulations, evidence-based therapies, and further integration into local healthcare systems for universal health coverage. Large scale projects to preserve such knowledge can be seen in China, Korea, India, and other regions of the world. Whereas computerization of Unani Medicines knowledge is still in its initial stage. Unani Medicines, offers distinct philosophy, principles and therapies. Unani Medicines, is at least 2500 years old traditional medical system and prevalently practiced, taught and researched mostly in Pakistan, India, and countries of Asian origin, that have a population of 2 billion people. The global market of Traditional Medicines is 120 Billion US$, unfortunately the share of Unani Medicines is almost negligible.

To preserve the knowledge of Unani Medicines, it is necessary to extract, translate and standardize it from multi-lingual books and manuscripts. Along with that online data collection system is required to collect the clinical medical data from Unani Medicines clinics spread all over the country. This whole process is exhaustive but mandatory in nature to transform and integrate this medical knowledge of traditional nature into modern medical science. Computing professionals are eager to process Unani Medicines data by state-of-the art artificial intelligence and machine learning models. And ultimately to develop valuable knowledge-based IT applications like, knowledge-bases of herbs, formulations, symptoms and diseases, clinical decision support systems, etc.

The article determines the needs, objectives, and challenges of establishing a center for knowledge preservation and computerization efforts for Unani Medicines. The study will investigate similar efforts in parallel domains of traditional medicines. The establishment of such center will be a significant step towards preserving a rich knowledge domain of traditional Unani Medicines that offers immense potential as an alternate and holistic health regime. It will advance its role in knowledge economy. This will provide a strong impetus for the continuation of scholarly interests in the field.

Factors affecting increasing rate of cesarean section and its complication across the globe

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Abstract:

Background: Recent studies shows increasing number of cesarean deliveries across the globe in urban areas of developing countries as well as in developed countries. Over decade women's are dying of complication in cesarean deliveries.

Introduction: The purpose of this study is to explore the factors that are responsible of increasing cesarean deliveries . and also the complications associated to cesarean deliveries . The factors influencing increasing rate of cesarean section are divided into two on the basis of medical and Non-medical factors . Medical factors include age of mother, obesity of mother, umbilical cord prolapse ,placenta previa, breech position and dystocia . Non-medical factors include financial incentives of doctors, time shortage, unethical act of doctors ,poor conditions of hospital in rural areas , patient preference , status of patient. Complications associated with cesarean include excess blood loss ,infection ,cystitis ,endometriosis, hematoma formation and post operative heavy bleeding.

Methodology: A systemic research was obtained using search engines including PubMed ,Scopus , Google Scholar and Medline .

Result: In result the most common medical factors include age and obesity of mother, and umbilical cord prolapse Non medical factors include patient preference and doctors financial incentives . Most common complication is blood loss and post operative heavy bleeding .

Conclusion: Due to these factors the rates of cesarean section are increasing day by day .In order to control the increasing rate of cesarean section across the globe due to its life threatening complications we have to manage these medical and non medical factors .

Keywords: Cesarean section, Medical factors , Non-medical factors , Complication.

Revolutionizing Glioblastoma Multiforme (GBM): Recent Advances in Nanotheranostics – A Comprehensive Review

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Abstract:

Glioblastoma multiforme (GBM) is a malignant brain tumor characterized by its high incidence and mortality rate. Gradually rising globally, the incidence has become more prevalent. Each year, around 13,000 patients are diagnosed with GBM. Given its fast-growing, invasive properties, glioma represents a pronounced challenge in therapeutic and diagnostic advancements. Drugs struggle to reach glioma cells due to the indiscriminate nature of anti-tumor agents. In addition, the presence of the blood brain barrier and blood brain tumor barrier presents a hurdle for glioma treatments. Standard Magnetic resonance imaging (MRI) provides unreliable responses for conventionally evaluating treatment responses. The emergence of advanced MRI techniques, MR spectroscopy, and Positron emission topography (PET) tracers has improved GBM diagnostic accuracy. Current therapy models incorporates the utilization of surgical abscission and adjuvant chemotherapy and radiation treatment; however, life expectancy is yet compromised. Nanotechnology has emerged as effective substitute that have been displayed to increase the effects of treatments including chemotherapy, gene therapy, immunotherapy etc. This review expects to give a precise summary of the diagnostic procedures used to evaluate GBM as well as explore new methodologies that use nanotechnology to limit the restrictions of these traditional techniques. In addition, the reviewers will investigate current and future perspectives of GBM treatments, including Nano therapy, Immunotherapy and gene therapy.

Analyzing Patient Satisfaction in Perspective of Service Quality, Experience and Hospital Brand Image

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Abstract:

Purpose – The aim of the study is to explore the impact of service quality (SQ) on patient satisfaction (PS) and analyze the mediating role of patient experience (PE) and the moderating influence of hospital brand image (HBI), which, in the literature on healthcare, is still to be developed and hypothesized.

Methodology & Design: The patients of private hospitals as being targeted through purposive sampling technique and questionnaire was apply to collect the data. Analysis was done through statistical software (SPSS).

Findings: The outcomes of the investigation affirm that patient satisfaction (dependent variable) is greatly influenced by service quality (independent variable). However, hospital brand image (moderating variable) has no direct effect on patient satisfaction but patient experience (mediating variable) shows direct effect on patient satisfaction (dependent variable).

Novelty – The study makes a unique contribution to healthcare literature, considering both theoretical and managerial perspectives. The study establishes a direct and significant relationship between service quality and patient satisfaction through patient experience in the healthcare sector. It also imparts guidance to healthcare service providers on how to create, enhance, and maintain service quality to sustain competitive advantage.

Implications :This research study provides policy guidelines for higher management of the hospitals to improve their existing services to make their patients experience better and enhancetheir brand image in health sector by satisfying their patients.

EVALUATION OF SOME BIOLOGICAL ACTIVITIES OF AQUEOUS-ETHANOLIC EXTRACT OF CENTAURIUM PULCHELLUM

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Abstract:

Objective to evaluate phytochemical screening, anti inflammatory and anti oxidant activity of ethanolic extract of centaurium pulchellum

Methods: Research plant ‘’Centaurium pulchellum’’ was collected from the cholistan desert of the Bahawalpur located in Southern Punjab, in June 2019. The plant was cleaned and dried under shade. Dried aerial parts were crushed and grounded into fine powder with the help of electrical grinder and hydroetrthanolic plant extract was prepared. Primarily, phytpchemical screening of ethanolic extract of centaurium pulchellum wsa performed using different chemical methods. Anti-inflammatory potential of hydroethanolic plant extract was assessed by using human red blood cell (HRBC) - membrane stabilization assay. DPPH free radical scavenging assay method was used to determine antioxidant activity of ethanolic extract of centaurium pulchellum.

Results: In phyto chemical screening of ethanolic extract, Centaurium pulchellum plant was observed positive for carbohydrates, tannins, glycosides, terpenes/ steroids, alkaloids and saponnins. Where as starch, amino acids, proteins, fats and flavonoids showed no positive results. Anti-inflammatory activities on ethanolic plant extract of Centaurium pulchellum demonstrated strong anti inflammatory activity. Significant antioxidant potential (IC50= 62.2) wasobserved in ethanolic plant extract of Centaurium pulchellum using DPPH method.

Conclusion: of our study reveals that centaurium pulchellum has strongest antioxidant and anti inflammatory potential.

Key Words: ccentaurium pulchellum, phytochemical screening, antioxidant, anti inflammatory,

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Exploring the Interplay of Genetic and Environmental Factors in Cardiovascular Diseases: A Comprehensive Review

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Abstract:

Cardiovascular diseases (CVDs) remain a leading cause of global morbidity and mortality, prompting extensive research into their multifaceted etiology. This original article synthesizes current knowledge on the intricate interplay between genetic predisposition and environmental factors in the development and progression of CVDs. Through a comprehensive review of recent studies, we delve into the intricate molecular mechanisms, signaling pathways, and genetic variations associated with various cardiovascular conditions. The exploration begins by elucidating the heritability of CVDs, emphasizing the role of genetic factors in susceptibility and disease manifestation. Genome-wide association studies have identified key genetic loci linked to conditions such as coronary artery disease, hypertension, and heart failure. However, the article underscores the importance of recognizing that genetic predisposition alone does not determine cardiovascular risk, as environmental factors exert significant influence. The second part of the review examines the impact of lifestyle, diet, and socio-economic factors on cardiovascular health. It synthesizes evidence supporting the notion that modifiable risk factors, such as smoking, sedentary behavior, and poor dietary choices, contribute synergistically with genetic factors to increase susceptibility to CVDs. Additionally, the article addresses the emerging field of epigenetics, highlighting how environmental exposures can induce modifications in gene expression patterns that influence cardiovascular outcomes. Furthermore, the article explores the potential for personalized medicine in cardiovascular care, leveraging genetic and environmental data for tailored risk assessments and interventions. It discusses ongoing initiatives in precision medicine aimed at identifying novel therapeutic targets based on individual genetic profiles. In conclusion, this original article provides a comprehensive overview of the complex interplay between genetic and environmental factors in cardiovascular diseases. It emphasizes the need for a holistic understanding of CVD etiology to inform targeted prevention and intervention strategies, paving the way for a more personalized approach to cardiovascular healthcare.

IN VITRO AND IN VIVO ASSESSMENT OF HIPPOPHAE RHAMNOIDES WITH NOVEL APPROACHES FOR THE MANAGEMENT OF ASTHMA

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Abstract:

Asthma is chronic illness characterized by difficulty in breathing due to inflammation and muscle tightening around the airways. The purpose of this research was to synthesize and analyze Anti-asthmatic activities utilizing Hippophae rhamnoides medicinal plant extract. For this study first extract was prepared by maceration method with 70:30 concentrations. Then preliminary phytochemical analysis was carried out for the identification of different active compounds that present in it. Then In

vitro anti-asthmatic activity, goat trachea isolation and chain preparation was performed to evaluate the result of Hippophea Rhumnoides at (4mg/ml) stock solution with different working concentration as compared with control. First oral acute toxicity study was performed at different dose concentration .Then further subactute toxicity, dissect and preserve the organs for histopathology. For the evaluation of Anti-Asthmatic activity was carried out at doses of 100, 200 and 400 mg/kg BW by using milk induced eosinophilia and leukocytosis. Anti-asthmatic Mast cells degranulation activity was performed at doses (150,300,450 mg/kg) BW to evaluate the effect of dose on mast cells degranulation. Statistical analysis was carried out by one way ANOVA. By maceration method we can obtained (25.4) % yield. Different Phytochemicals can obtained such as, alkaloids, tannins, saponins, phenols, flavonoids and oil. During acute and sub acute toxicity study we observed that at the dose of 2000mg/kg it become safe and shows no side effect. In vitro goat trachea isolation (4mg/ml) stock solution at the (3.2ml) working concentration shows contraction (23.166±4.52) of trachea as compare with control (37.256±5.1) and Standard 11.276±4.21). In milk induced eosinophilia negative control shows (448.11±2.78), Positive control shows (79.18 ±6.10) and 400mg/kg H.R extract shows (127.12±4.21) amount of eosinophils as we compare with normal control. In milk induced leukocytosis Negative control shows (6400.00±5.77) Positive control shows (2650.01±6.35) and 400mg/kg H.R extract shows (2650.01±6.35) amount of leukocytes as we compare with normal control. In mast cells degranulation Standard drug shows (73.5%) % Protection and the extract of H.R at the dose of 450mg/kg shows (52.2%) %Protection of the mast cells. It had been concluded that the extract of H.R at maximum dose showed sufficient results in different Anti-Asthmatic activity. However, further studies are required to isolate the active compounds that have bronchodilator effect.

Key words: Asthma, Goat Trachea isolation, acute and sub-acute toxicity, eosinophilia, leukocytosis, and mast cells degranulation

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Enhancing Herbal Medicine with Nanoparticles: A Promising Frontier in Drug Delivery.

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Abstract:

Introduction: Nanoparticles (NP) with sizes ranging from 1 to 100 nm, can be manufactured on purpose through different methods to carry out a specific function. They exist naturally or produced generally as byproducts of combustion reactions. The potential applications of emergent features of nanoparticles have vast application in various fields and disciplines including electronics, medicine/ pharmaceutical, and other domains. In the diverse fields of health care system, utilization of herbal medicines has been increased because it is considered as the safer alternative for modern medicines, sustained therapeutic value and lesser side effects. Herbal medication delivery methods that are nanosized could improve efficacy and address the challenges of plant-based therapies in the future. Nanoparticles have a number of benefits on herbal drug delivery system as it improves solubility, bioavailability, sustained delivery, tissue distribution, pharmacological activity and protection from toxicity and physical and chemical deterioration. The synthesis of nanoparticles can be achieved by adopting the novel methodologies. Different formulation techniques of nanoparticles have been made to get more therapeutic effects of herbal medicine.

Methodology: The study will be based on comprehensive review highlighted existing research on Nanoparticles, synthesis, formulation techniques and pharmacological effects of those nanoparticles. The data will be collected from Google Scholar, ScienceDirect, SciFinder, ResearchGate and PubMed assets on nanoparticles. The data will cater the various formulation and synthetic techniques of different nanoparticles of natural herbs having medicinal effects, giving the idea that Herbal medication delivery methods that are nanosized have improved efficacy rate and can address problem associated with plant-based therapies. i.e. Curcuma longa, Nigella sativa, Zingiber officinale, etc

Conclusion: On the basis of study, we can conclude that synthesis of nanoparticles has positive influence in aspect of designing innovative drug delivery system for herbal ingredients and it is one of such approach and achieving more medicinal effects.

Key words: Nanoparticles, Herbal medicines, Drug delivery systems, Synthesis, Formulation techniques, Pharmacological effects

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ANTIARTHRITIC POTENTIAL OF SOME MEDICINAL PLANTS IN PAIKSTAN

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Abstract:

Rheumatic disorders are a broad category of more than 100 autoimmune as well as chronic degenerative illnesses that are accompanying with constant or chronic pain, inflammation, as well as physical impairment. Rheumatic illness burden is enormous and rising rapidly, mostly due to population increase and ageing. With a population of over 200 million, Pakistan has significant healthcare requirements. According to reports, Pakistan has a 58–148/1000 prevalence of rheumatic illnesses. According to recent estimates, Pakistan has at least 15 million people with rheumatic disorders. Methodology: The use of herbal medicines for arthritis relief has been increasing steadily. Data of medicinal plants was collected from already published articles, thesis through online search engines Google scholar, PubMed and Research Gate. Results: The current analysis reveals that there are a lot of alternative herbs used for pain and inflammation relief in arthritis. Curcumin extracted from curcuma longa, Aloe barbadenses, Colchicum autumnale, Strychnous nux-vomica, Peganum hermala, Cannabis sativa, Operculina turpathum, Semicarpus anacardium, Piper longum, capsaicin active component of capsicum species, Nimbolide is a triterpene extracted from Azadirachta indica, Eugenia caryophyllata etc. is source of phenolic constituent, are commonly used for pain relief. These plants have different secondary metabolites like alkaloids, flavonoids, terpenoids and phenols which possess anti-arthritic potential. Lavender oil extracted from lavendula stoechus species, extensively used having properties of sedation, antidepressant and anti-inflammatory. Curcumin nanoparticles and microparticles are also studied for their antiarthritic potential, as modern techniques. Conclusion: There must be exponential growth in the prescribing of medicinal plants. More research should be carried out on various medicinal plants to analyze their efficacy as well as safety profile in management of arthritis.

Key words: Arthritis, Medicinal plants, Curcumin, Lavender oil, pain management.

LOWER BACK PAIN, A REVIEW: THERAPEUTIC POTENTIAL OF ALTERNATIVE MEDICINE FOR RELIEF OF BACK PAIN

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Abstract:

Background: Lower back pain (LBP) is one of the most common problems encounter in young populace with life time prevalence up to 84% is leading cause of disability and work loss over the world. LBP aggravating factors are depression, growing age, more baseline pain and dysfunction. In this review we discuss alternative medicines used for the management of lower back pain. Methodology: The use of herbal medicines for pain relief has been increasing steadily. Meta-analysis for back pain relief. Data of medicinal plants was collected from already published articles, thesis through online search engines Google scholar, PubMed and Research Gate etc. Results: The current analysis reveals that there are a lot of alternative herbs used for pain relief. Eucalyptus essential oil, Lavender essential oil, clove, Capsaicin present in chili pepper, Rosemary essential oil, Ginger, Peppermint essential oil, Nimbolide is a triterpene extracted from Neem, Feverfew and Turmeric etc. are commonly used for pain relief. Lavender oil extracted from lavendula stoechus spp. have traditionally used having properties of sedation, carminative, antidepressant and anti-inflammatory. Rosemary main constituents were 1,8- cineole, camphor, and α-pinene have analgesic effects. Beside this Aloe barbadenses, Colchicum autumnale, Strychnous nux-vomica, Peganum hermala, Cannabis sativa, Operculina turpathum, Semicarpus anacardium, Piper longum, Eugenia caryophyllata etc. are also commonly used for pain relief. These plants have different secondary metabolites like alkaloids, flavonoids, terpenoids and phenols which possess anti-arthritic potential. Conclusion: There must be exponential growth in the prescribing of medicinal plants. More research should be carried out on various medicinal plants to analyze their efficacy as well as safety profile in management of back pain.

Key words: back pain, alternative medicine, menthol, lavender oil, pain management.

A Comprehensive Meta-Analysis on the Role of Phytochemicals in Biomedicine and Their Effects on Postpartum Weight Loss and Leptin Signaling

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Abstract:

Postpartum weight retention is a risk factor for developing type 2 diabetes mellitus (T2DM) among women with gestational diabetes mellitus (GDM). Lifestyle interventions that promote healthy weight loss and metabolic health are needed to prevent T2DM in this population. Phytochemicals have been used traditionally for various purposes during pregnancy, childbirth and postpartum recovery, including weight management and glucose regulation. However, scientific evidence for the efficacy and safety of these phytochemicals is scarce. This paper aims to analyze the current literature on the use of phytochemicals for postpartum weight loss with reference to their role in leptin metabolism, a key hormone involved in energy balance and insulin sensitivity. We searched PubMed, Web of Science,

Scopus, DOAJ, ScienceOpen, CORE and Google Scholar for relevant articles published from 2000 to 2024. We identified 15 studies that reported the effects of plant extracts or compounds on postpartum weight loss, leptin levels or leptin signaling pathways in animal or human models. The most commonly studied phytochemicals were resveratrol, fisetin, quercetin, luteolin and cyanidin-3-glucoside. The results showed that these phytochemicals modulated leptin expression, secretion, receptor activation and downstream signaling, leading to reduced adiposity, improved glucose tolerance and enhanced insulin sensitivity. However, the studies varied widely in terms of design, dosage, duration, outcome measures and quality. Therefore, more rigorous, and standardized research is needed to confirm the benefits and safety of these plants for postpartum weight loss and leptin metabolism. We also discussed the potential mechanisms, limitations, and future directions of this research field.

Advent of nanotechnology in the field of cosmeceuticals

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Abstract:

Use of cosmeceutical is diverse for curing the conditions like photoaging, wrinkles, hyperpigmentation, sunburn and hair damage. For the growing population and increased demand, cosmeceutical industries are the rapid growing segment on the graph. In the area of cosmetics,nanoparticle is the topic of concern as the absorption on faster rates and efficient damage repair can be achieved significantly through the use of the particles measured at the nanometer scale. In cosmeceuticals,nanoparticles can be used in the form of liposomes,nanocapsule,nanocrystals,dendrimers,cubosomes,niosomes,nano gold and nano silver. Nanoparticles can be synthesized physically, chemically and biologically unlocking their diverse use into the formulations accordingly.The use of nanotechnology in the arena of cosmeceuticalsis appreciated for the enhanced penetration of the drug, site specific drug action,the higher stability of vulnerable compounds,and sustained release action of a drug. Apart from the benefits of the nanotechnology in the field of cosmeceuticals, questions have been raised for the persistent use of the product having any Nanotoxicological effects and health hazards. This review will disclose the science behind the formation of nano particles and their use in the field of cosmeceuticals

Keywords:cosmeceuticals, nanotechnology, nanotoxicity, deliverysystem, sun protectants, anti-aging.

Evaluation of In Vivo Anti-Diarrheal Activity of Selected Medicinal Plants Traditionally Prescribed for the Management of Diarrhea

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Abstract

This study explores the anti-diarrheal activities of aqueous-ethanolic extract of selected medicinal plants collected from Rawalakot Azad Kashmir, Pakistan. Different doses of the hydro-ethanolic extract

of these Punica granatum, Aegle marmelos, Myrtus communis, and Helicteres isora as 250, 500, and 1000 mg/kg body weight (b.w.) were tested for antidiarrheal activity using castor oil-induced diarrhea in standardized animal specimens of albino rats (n = 5 in each group). Loperamide as a standard drug (control group, n = 5) and atropine (control group, n= 5) were utilized to evaluate the frequency of diarrheal feces and to check the intestinal transit by charcoal meal, respectively, while normal saline was used as a negative control group (n= 5). Anti-diarrheal activities of hydro-ethanolic extracts at different doses were compared to standard drug and negative control group. Results revealed that extracts of the selected plants at different doses induced significant ($p< 0.05$) reduction in number of diarrheal feces and this reduction was increased with increasing the dosage. This demonstrated that aqueous ethanolic extracts of the studied plants were able to increase the percentage inhibition of the charcoal meal movement and at high concentration (1000mg/kg b.w.), it significantly decreased the intestinal transit as compared with standard drug (atropine). From these results, it can be concluded that the selected traditional plants can have a significant antidiarrheal effect, but more research is recommended to explore the phytochemical constituents responsible for these anti-diarrheal activities.

Keywords: Medicinal plants, Anti-diarrheal activities, ethanolic extracts, traditional treatments

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Effect of Gymnema sylvestre on Hypercholesterolemic insulin Resistant Hepatic Expression of PCSK9 Gene

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Abstract:

Background: Hypercholesterolemia is a condition with high cholesterol levels and is leading driver for cardiovascular diseases and high mortality around the globe. Familial hypercholesterolemia is widespread hereditary cause of early cardio-vascular disease (CVD) among primitive. PCSK9 is a gene involved in lipid metabolism and inhibiting it would hamper cardiovascular events. Gymnema sylvestre possesses antidiabetic, anti-Hypercholestrolemic, and hepatoprotective properties. However, it's effect on expression of pCSK9 gene is undiscovered so far. Therefore, the study aimed to evaluate the effect of Gymnema sylvestre on PCSK9 gene expression in hypercholesterolemic insulin resistant rats. Methodology: In this study, (140-180g), 6-8weeks old rats were utilized. They were given high fat diet for one month. Alloxan was administered 100mg/kg b.w and insulin resistance was confirmed by OGTT (Glucose 3g/kg). Hypercholesterolemic insulin resistant rats were exposed to 200mg/kg of Gymnema sylvestre leaves ethanolic extract once daily for 28 days. Animals were sacrificed and blood samples were collected. Hepatic, pancreas, and adipose tissues were extracted and analyzed for PCSK9 gene expression by qRT-PCR. Bioactive compounds of GS were also screened and analyzed in-silico by Swiss-ADME and were docked against target protein PDB-ID 6U26 by Auto-dock vina. Results were statistically analyzed and $p<0.05$ was considered significant. Results: Our findings revealed that Gymnema sylvestre significantly reduced the expression of PCSK9 mRNA in hepatic ($p<0.0001$) (18S<0.0001), pancreas (18S-$p<0.843$) and adipose tissue ($P<0.013$) (18S-$P<0.0001$). Moreover, GS treatment also significantly ($p<0.0001$) reduced blood glucose levels and improved lipid, liver, and renal profile. In-silico and docking results showed compound 101, 113-115 and 119 showed binding energy (-8.9, -9.2, -8.8, -8.8, -9.3) respectively. Histopathological examination exhibited normal structure of organs in treated group rats. Conclusion: HFD and Alloxan induced insulin resistance is associated with

increased PCSK9 mRNA expression and GS extract (200mg/kg) significantly reduces PCSK9 mRNA expression in hepatic, pancreatic(18S), and adipose tissues.

Knowledge, Attitudes, Practices, And Awareness Towards Medication Use Among Health Care Students In Hamdard University.

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Abstract:

Introduction: To assess the convenience of using self-medication habits among Hamdard University in Karachi, Pakistan for treating minor ailments. Self-medicines are also called non-prescription or over-the-counter drugs. They are defined as purchasing and consuming drugs or medicines without the advice of any physician or pharmacist, and also without any diagnosis.

Objective: The objectives of our study are:

(I) To determine the level of perception and awareness regarding OTC medications, among the students of Hamdard university

(II) To determine the effects of certain factors like socio-demographics, personal health and family history of illness, attitudes and practices regarding OTC drugs, among the Hamdard University students.

Method: Oral consented to a self-administered, close-ended, questionnaire to collect data. Statistical Package for Social Sciences (SPSS) version 24 is used to analyze data. To investigate the relationship between understanding, attitude and practice with self-medication use, chi-square analysis and multivariable logistic regression analysis were used.

Result: A total of 300 questionnaires were circulated among university students. Responses received from 291 which give a response rate of 97%. Female volunteers were 66% (192) whereas male volunteers were 34%(99), most of them belong to the age group of 21-23 (46%).

Conclusion: Self-medication plays an important role in self-care because its prevalence makes people independent from having to make any decisions regarding their health despite being aware of its harmful effects. World Health Organization also agreed with that point OTC drugs are mostly used for short-term treatment.

Keywords: Self-Medication (SM), Adverse Effect, Over the counter (OTC)

Unveiling Stomach Disease Patterns: A Deep Learning Framework with ResNet Feature Fusion and Marine Predator Optimization

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Abstract:

Wireless capsule endoscopy (WCE), the most efficient technology, is used in the endoscopic department for the examination of gastrointestinal (GI) diseases such as a poly and ulcer. WCE generates thousands of frames for a single patient's procedure, and the manual examination is time-consuming and exhausting. In the WCE frames, computerized techniques make the manual inspection process easier. Deep learning has been used by researchers to introduce a variety of techniques for the classification of GI diseases. Some of them have concentrated on ulcer and bleeding classification, while others have classified ulcers, polyps, and bleeding. In this paper, we proposed a deep learning and Marine Predator optimization-based method for GI disease classification. There are a few key steps in the proposed framework. Initially, the contrast of the original images is increased, and three operations based on data augmentations are performed. Then, using transfer learning, two pre-trained deep learning models are fine-tuned and trained on GI disease images. Features are extracted from the middle layers using both fine-tuned deep learning models (average pooling). On both extracted deep feature vectors, a Marine Predator optimization is proposed and applied. The resultant selected feature vectors are later fused using the serial based fusion approach. For classifying GI diseases, the final fused vector features are classified using machine learning algorithms. Three publicly accessible datasets, Kvasir-v1, Kvasir-v2, are used in the tests. The results show that, in 2020, traditional approaches achieved 98% accuracy; in contrast, 99% accuracy was achieved with less processing effort in our suggested approach.

Comparative studies of pharmaceutical manufacturing issues leading to product recall between developed and developing countries

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Abstract:

Recalling pharmaceutical products is an important procedure that regulatory bodies and pharmaceutical companies use to address problems pertaining to a drug's quality, safety, or efficacy. When there is evidence or concern that a product could harm public health or not meet laws and regulations, this preventive action is taken. This study focuses on regulatory responses in the US (FDA), UK (MHRA), and Pakistan (DRAP), including recall classifications and time taken for actions Moreover, this study involves assessment of knowledge, attitude and practice of pharmacist community in Pakistan about product recall. A comprehensive analysis revealed a total of 477 recalls in the three countries published on respective official websites between 2021 and 2023. Out of these, 148 product recalls were made by US. Pakistan reported 112, and UK contributed 217 to the overall count. UK recalled majority of the products due to misbranding (106), while for US adulterated products were the major reason for product recall (77) whereas, in Pakistan majority of products were recalled due to being Substandard (65). Most of the product recalls reported was Class II in Pakistan and US while UK had more recalls of class IV. A significant difference was observed between US, UK and Pakistan for time remaining to expiry when product recall was made with Pakistan having the least time to expiry ($p<0.0001$). Additionally, in KAP study, we found that Pakistani pharmacists scored well on our knowledge, attitude and practice question. However, only 1 out of 59 pharmacists working in different domains have had handled product recall practically. This finding provides a useful insight on a dire need of improving communication channels

for product recall in Pakistan. In conclusion, the comparative analysis highlights how diverse the regulatory environment is in developed and developing countries, with varying challenges and solutions

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Restoration of the antioxidant potential, hepatoprotective and renal protective effects in male albino mice with hydroethanolic extract of Taraxacum officinale.

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Abstract:

Background: Phytomedicine has found more relevance and is becoming more accepted as a complementary medical strategy.

Objectives: In the current study, phytochemical components of T. officinale were tested in vitro for their ability to act as antioxidants and their effects on common hepatoprotective measures.

Methods: Using standard procedures, the phytochemicals, cytotoxicity and pharmacological effect in a hydroethanolic (30:70 v/v) extract of Taraxacum officinale were determined.

Results: The result showed the presence of alkaloids, terpenoids, flavonoids, and phenolic acids among the constituents. Numerous chemical components in the extract that are physiologically active were discovered using high-performance liquid chromatography and Fourier-transform infrared spectroscopy. Functional groups and a broad spectrum of phenolic substances were both validated by FTIR spectroscopy and HPLC, respectively. Additionally, the extract induced hemolysis (16.33 0.106%), clot lysis (19.45 3.21%), antioxidant DPPH scavenging (24.31 0.13%), H2O2 scavenging (3.81 0.06%), and reducing power (17.37 0.05%). Cytotoxic assays revealed that the substance was non-mutagenic when tested against Salmonella typhi TA98 and TA100. In vitro tests on albino mice showed that, when extract dosages were given orally for 28 days following CCl4 intoxication, liver enzymes, renal profiles, lipid profiles, serum electrolytes, and stress markers were significantly ($P<0.05$) recovered. In addition, the dosage group (200 mg/Kg b.w.) also significantly ($P<0.05$) improved the structural architecture of the hepatic tissue. According to the results, Taraxacum officinale had a significant therapeutic response to address medical issues, particularly liver problems. These findings were confirmed by histopathology reports.

Conclusion: According to the study's findings, Taraxacum officinale has beneficial properties that may help prevent liver problems.

Key words: Antioxidant, Hepatoprotective, Medicinal plants.

Formulation for the Targeted Delivery of a Vaccine Strain of Oncolytic Measles Virus (OMV) in Hyaluronic Acid Coated Thiolated Chitosan as a Green Nanoformulation for the Treatment of Prostate Cancer: A Viro-Immunotherapeutic Approach

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Abstract:

Background: Oncolytic viruses are reported as dynamite against cancer treatment nowadays.

Methodology: In the present work, a live attenuated oral measles vaccine (OMV) strain was used to formulate a polymeric surfacefunctionalized ligand-based nanoformulation (NF). OMV (half dose: not less than 500 TCID units; 0.25 mL) was encapsulated in thiolated chitosan and outermost coating with hyaluronic acid by ionic gelation method characterizing parameters was performed.

Results and Discussion: CD44 high expression was confirmed in prostatic adenocarcinoma (PRAD) by GEPIA which extracted dataof normal and cancer tissue from GTEx and TCGA. Bioinformatics tools confirmed the viral hemagglutinin capsid protein interaction with human Caspase-I, NLRP3, and TNF-α and viral fusion protein interaction with COX-II and Caspase-I after successful delivery of MV encapsulated in NFs due to high affinity of hyaluronic acid with CD44 on the surface of prostate cancer cells. Particle size = 275.6 mm, PDI = 0.372, and ±11.5 zeta potential were shown by zeta analysis, while the thiolated group in NFs was confirmed by FTIR and Raman analysis. SEM and XRD showed a spherical smooth surface and crystalline nature, respectively, while TEM confirmed virus encapsulation within nanoparticles, which makes it very useful in targeted virus delivery systems. The virus was released from NFs in a sustained but continuous release pattern till 48 h. The encapsulated virus titer was calculated as 2.34×107 TCID50/mL units, which showed syncytia formation on post-day infection 7. Multiplicities of infection 0.1, 0.5, 1, 3, 5, 10, 15, and 20 of HA-coated OMV-loaded NFs as compared to MV vaccine on PC3 was inoculated with IC50 of 5.1 and 3.52, respectively, and growth inhibition was seen after 72 h via MTT assay which showed apoptotic cancer cell death.

Conclusion: Active targeted, efficacious, and sustained delivery of formulated oncolytic MV is a potent moiety in cancer treatment at lower doses with safe potential for normal prostate cells.

M2 Macrophages regulate adipose tissue metabolism in lean and obese states through Transforming growth factor-beta 1

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Abstract:

Obesity is associated with a phenotypic transformation of macrophages. In the lean stage, the predominant macrophages are M2 type; meanwhile, in the obese stage, pro-inflammatory M1 macrophages predominate. In the past decade, some groups reported that M2 macrophage is involved in insulin sensitivity by their inflammatory function. However, this proposal was challenged by some recent reports that depletion of M2 macrophage leads to insulin sensitivity. Transforming growth factor-

β1 (TGF-β1) belongs to a TGF-β family that regulates various functions of diverse cell types. Within adipose tissue, CD206 M2 macrophages were reported to be the main source that secrete TGF-β1. Our research concentrates on finding what is the main role of CD206 M2 macrophage-derived TGF-β1 in glucose and insulin metabolism. So we generated M2 TGF-β1 KO and put it in either normal chow or a high-fat diet. Our data showed M2 TGF-β1 KO improved glucose and insulin tolerance. our data showed that there was reduced adiposity in M2 TGF-β1 KO mice. Histology of epididymal white adipose tissue (eWAT) shows the higher frequency distribution of smaller adipocytes, collaborating with the increasing ratio of committed pre-adipocytes, thereby accelerating de novo adipogenesis. In addition, in eWAT of high-fat diet-fed mice, M2 TGF-β1 KO showed a reduction in a number of crown-like structures, pro-inflammatory markers, lipid-associated macrophage-marker genes, and adipose tissue fibrosis. Collectively, our data demonstrated that deletion of macrophages-derived TGF-β1 stimulated de novo adipogenesis in both lean and obese stages, resulting in the generation of smaller insulin-sensitive adipocytes, improving glucose homeostasis and insulin sensitivity, and limiting obesity and diet-induced consequences.

INNOVATION IN PHARMACEUTICAL GEL Y TRANSFORMING TIZANIDINE AND MELOXICAM TABLET INTO GEL FORM FOR LOCALIZED ACTION & TO OVERCOME DROWSINESS

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Abstract:

Tizanidine is an imidazoline central alpha (2)-adrenoceptor agonist widely used to manage spasticity secondary to conditions such as multiple sclerosis (MS), stroke, muscle spasm and spinal cord injury (SCI). Meloxicam, an oxicam derivative and is a nonsteroidal anti-inflammatory drug (NSAID). It is a selective inhibitor of cyclooxygenase-2 (COX-2). It is used in the management of rheumatoid arthritis, acute exacerbations of osteoarthritis, ankylosing spondylitis and juvenile idiopathic arthritisThe most common adverse effects associated with tizanidine are dry mouth and somnolence/drowsiness. Tizanidine usually starts to work within one to two hours and wears off after about six to eight hours. This medicine in oral dosage form can make you feel sleepy, dizzy, or weak.So, to overcome these side effects and provide localized action we transform two tablets Tizanidine and Meloxicam by breaking these tablets and then these broken tablets mixed into solvent ethanol to remove excepients and extracted active to add into gel formulation for this first gel prepared by using thickening agent like HPMC & carbopol, Preservatives like Parabens or ascorbic acid, Monoethanolamine,Mineral Oil or any by use of Surfactants Anionic (Sodium Lauryl Sulfate) ,Cationic (Cetrimide) ,Nonionic (Nonoxynol Series) ,Zwitterionic (Dodecylbetaine) or by dissolving gel ingredients in any any solvent like Water, Ethanol, Isopropyl Alcohol, Propylene Glycol . So a gel in which combination of Tizanidine and Meloxicam are added to provide localized action for muscle spasm, injury along with pain killing action with no side effects.

Elevating Medicinal Herb Plant Authentication and Purity through DNA Barcoding: Harnessing the Power of ITS2 Amplification for Genetic Identification

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Abstract:

Global commercial interest in the identification of therapeutic plants has increased due to the significant risk of adulteration in the herbs. The main methods for genetically identifying herbs include DNA barcoding. The main advantage of this method is that it can determine the material's purity. This study focuses on the precise identification of three significant species of the Zingiberaceae using amplification and sequencing of the nuclear internal transcribed spacer region (a barcode region). The ribosomal nuclear ITS2 region of the chosen plant species, according to the results, exhibits 100% identity with the reference genome, indicating a high rate of species identification. According to the study's findings, the ITS2 standard barcode offers a revolutionary tool for identifying species, preserving genetic diversity, and safely using plant species with medical importance.

Tibb: A silence of Natural Medicine and the Art of Care

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Abstract:

Tibb is integration of Unani, Greco-Arib,Persian health care system, and originated approximately 10,000 years ago.It is ancient holistic care system, based on humoral and temperamental theories that was hypothesized by Hippocrates and Galan.The different religions beliefs describe and practices ancient holistic care system . this medical discipline as science of bio-natural medicine and art of care was greatly influenced renowned Scholar's during old century .Among them,Ibn Sina refined the philosophical principles of Physis , Temperament, Humors, and Six lifestyle Factors, which are fully integrated in Tibb now. In the era of sub content`s British colonization,the greatest defender of Tibb was Maseeh-ul-mulk Hakeem Ajmal Khan,Who established Dehli Tibbia Collage and invited the Founder of Pakistan in 1940 as Chief Gust in Certificate distribution where he the ultimate need of Tibb e Unani to be primary health care system in Pakistan. IN upcoming times, the Discoveries in Tibb by Hakee Dost Muhammad Sabir Multani, introduced many innovations including refine and easy to understand with the named Qanoon Mufrad Aaza. There is dire to do comparison between Tibb and Western Medicine.

Keywords: Healthcare, Tibb e Unani,Arvvedic , Qanoo Mufrad aaza ,TCM

HEAVY METALS CONTAMINATION EFFECTS ON MEDICINAL PLANTS IN DIFFERENT ENVIRONMENTAL CONDITIONS: A REVIEW

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Abstract:

Introduction: Heavy metals (HM) are vital for cellular homeostasis. This study focuses on contaminated medicinal plants due to environmental pollution from various industrial processes and atmospheric deposition of harmful substances. This is crucial as humans absorb these metals from plants, which readily uptake substances from water, soil, air, or occupational environments. Medicinal plants, used by 65-80% of the world's population, play a key role in traditional medicine, making it essential to understand their interaction with pollutants, especially persistent inorganic ones like HM. Heavy metals induce toxicity primarily through free radical release, harming biological molecules and potentially leading to cancer and neurotoxicity. Methodology: Data was gathered from reputable research sites like Google Scholar, PubMed, Wiley Online Library, and Springer Link to determine HM quantities in various medicinal plants. Results: This review aims to provide a comprehensive understanding of HM, significant pollutants in herbal remedies posing health risks. Certain plants, like Plantago major L., Thymus vulgaris, Taraxacum officinale Wig, Tanacetum vulgare L., and Mentha longifolia, exhibit higher HM levels in polluted soil near industrial areas, potentially resulting in severe clinical consequences. Conclusion: These plants may exceed WHO allowable limits for HM, impacting crucial biological processes. Continued research on medicinal plants adapted to anthropogenic pressures is vital. Establishing standards for toxicant levels in pharmaceuticals, considering manufacturing processes, and acceptable levels of other metals in medicinal plant materials is necessary.

Keywords: Bioaccumulation, Heavy metals, contaminated soil, Medicinal plants, Health risk.

A Review On Medicinal Exploration of Costus Igneus : (The Insulin Plant)

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Abstract :

Costus igneus, commonly known as the Insulin plant or by various colloquial names such as Step Ladder and Fiery Costus, stands out as a botanical marvel with an array of medicinal benefits derived from its leaves. Packed with a diverse array of chemical constituents, including Triterpenoids, Carbohydrates, Alkaloids, Proteins, Saponins, Tannins, Steroids, and Flavonoids, this plant has earned its place in traditional medicine.Primarily celebrated for its anti-diabetic properties, the Insulin plant has been a ray of hope for those managing diabetes. The presence of active compounds in its leaves may aid in regulating blood sugar levels, offering a natural alternative for diabetic individuals.Beyond its role in diabetes management, Costus igneus showcases remarkable anti-microbial and antioxidant properties.

It has been employed to combat various microbial infections, providing a herbal remedy that aligns with the body's natural healing mechanisms. The antioxidant-rich profile contributes to cellular protection, potentially reducing the risk of oxidative stress-related ailments.

Additionally, this botanical gem acts as a hypolipidemic agent, influencing lipid metabolism and offering potential benefits for cardiovascular health. Its natural prebiotic properties make it a valuable aid for bitter digestion, promoting gut health in a gentle and holistic manner.Costus igneus also serves as a diuretic, supporting kidney function and aiding in the elimination of toxins from the body. As a holistic powerhouse, the Insulin plant not only addresses specific health concerns but also contributes to overall well-being. Embracing the centuries-old wisdom embedded in Costus igneus opens a gateway to a natural, plant-based approach to health that is as diverse as the plant itself.

Keywords : Insulin plant,Antidiabetic ,Hypolipidemic ,Diuretic,Antioxidant, and Anti tumor.

Bone mass in Premenopausal Saudi women and its association with obesity

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Abstract:

This study describes that low bone density is prevalent in premenopausal Saudi women, especially women of normal weight and vitamin D deficiency. Although BMD is higher in obese young women, this may not be beneficial later in life in conjunction with persistent vitamin D deficiency.

Introduction: Not attaining peak bone mass is one crucial factor contributing to the risk of developing osteoporosis and suffering fractures in later life. The objectives of this study were to describe the normal range of bone mineral density (BMD) and bone mineral content (BMC) in premenopausal Saudi women in relation to obesity and vitamin D insufficiency.

Methods: A cross-sectional study involving 312 healthy Saudi women aged 20-40. All women were clinically examined. BMD (g/cm2) and BMC (g) assessed at total body (TB), femoral neck (FN) and lumbar spine (LS) were performed using dual-energy X-ray absorptiometry (DXA). Obesity was defined as BMI ≥ 30 kg/m2 and vitamin D deficiency defined as 25(OH)D < 50 nmol/L.

Results: Almost half of the studied women were obese, and the majority (86.2%) were deficient in vitamin D. Mean BMD in TB 1.060 ± 0.091, FN 0.918 ± 0.153 and LS 1.118 ± 0.123 g/cm2, while TB-BMC 2077 ± 272 g. When classified by BMI, the proportion with low bone density was 2-3 times higher among the normal weight compared to the obese women, $p < 0.001$. In the cohort overall, ~ 19% of these young premenopausal women had osteopenia or osteoporosis at the femoral neck, but 26% in normal weight, vitamin D deficient women.

Conclusion: This study shows low bone density in premenopausal Saudi women, particularly those with normal weight. While obesity appears to confer some protection against vitamin D deficiency at this age, this is assumed to change in later life.

Keywords: Bone mass; Bone mineral content; Bone mineral density; Obesity; Premenopausal women; Saudi women.

Body Mass Index and Insulin Resistance are Predictors of Bone Mineral Density in Saudi Women with Polycystic Ovary Syndrome

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Abstract:

Introduction Polycystic ovary syndrome (PCOS) is the most common endocrine disorder affecting women of reproductive age worldwide (5-18%) as well as Saudi Arabia (16%). Bone mineral density (BMD) is the best measure of bone health and diagnosis of osteoporosis. This study aims to identify the predictive factors that influence bone mineral density in PCOS women.

Methodology: Study Design: Case-control study. 60 Saudi PCOS women and 45 healthy women visited a clinic at the Center of Excellence for Osteoporosis Research, Jeddah, Saudi Arabia, from January to September 2019. Each study group was stratified according to BMI into lean (<30 kg/m2) and obese (≥30 kg/m2) subgroups. Luteinizing hormone (LH) and follicle-stimulating hormone (FSH) were assessed. Insulin resistance (IR) was determined by homeostasis model assessment (HOMA) index. BMD (g/cm2) was assessed at lumbar spine (L1-L4) and femoral neck by dual energy X-ray absorptiometry (DXA). Multiple regression analysis for predicting BMD included age, BMI, IR-HOMA and endocrine hormones.

Results: A total of 105 women (60 PCOS and 45 Controls), their age (18-45 years), and BMIs (16.6 to 49.7 kg/m2) were analyzed. LH and LH/FSH were significantly higher in PCOS group for all comparisons, P< 0.01. IR-HOMA was more prevalent in PCOS (50.0%) than in control women (17.0%). BMD was found to be lower in women with PCOS than in control women at the lumbar spine (1.128±0.124 vs. 1.136±0.097, P<0.05) and neck femur (0.959±0.117 vs. 0.965±0.108, P<0.01). By applying Multiple Regression analysis, we found that BMI and IR-HOMA are predictors of bone mineral density in studied women.

Conclusion: Although obesity may provide some protection and strengthen bones, it increases the risk of fractures and stress on joints later in life. We also advise PCOS women to lose weight and check their vital signs routinely.

Keywords: Polycystic ovary syndrome; body mass index; bone mineral density; insulin resistance; Saudi Women.

Perception of Unani and Allopathic Medicine system regarding Communicable and Non-Communicable Diseases / ailments management

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Abstract:

The research aimed to analyze the general perception of the public of Pakistan and specifically Karachi pertaining to Unani medicines against the use of Allopathic medicines for the management of communicable and non-communicable diseases/ ailments. In this perspective, a cross sectional study was conducted in different hospitals operating in Karachi including Shifa-ul-Mulk Memorial Hospital,

Naimat Begum, and Matab Hamdard, Aram Bagh. In this study, n= 400 participants of both gender (males = 48% and Females = 52%) comprises age group of 18 years to 56 plus were interviewed, and the techniques employed to attain the goal, incorporated frequency, chi-square testing and crosstabs on SPSS version 22. The perception of Unani Medicine in comparison with allopathic medicine in association with age, gender, education, and household type for the management of communicable diseases/ailments: Hepatitis, Diarrhoea, Flu and Sexually transmitted diseases (STDs) whereas in non-communicable diseases/ ailments: Jaundice, Hypertension, Pain, Infertility, Insomnia and Diabetes were analyzed respectively. It was evaluated discretely whether the opinions are dependent on the age-groups or gender. The results revealed that some of the stances were dependent but most of them were not.48% respondents realized Unani medicine works better for Jaundice and Infertility, 63% are of the viewpoint that is has effective result in the treatment of Hepatitis, 60% are of the opinion that is has excellent results for curing flu. In this regard, the chi square results with gender about affordability of medicine is found to be (p=0.006). General perception was that people consider Unani medicine as affordable and safer yet not beneficial to treat every disease, especially chronic illness as the data suggest(p=0.527). This study highlights avenues to effectively promote Unani medicine and findings the areas of improvement to better serve the masses.

It was also concluded that the population viewpoint regarding treatment choice for communicable diseases is for Unani medicine (51.97%) as compared to non-communicable diseases (38.3%).

Keywords: Unani medicines, Allopathic medicine, general perception, Communicable diseases, non-communicable diseases

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Antineoplastic studies and Characterization of biosynthesized silver nanoparticles of Oxystelma esculentum leaves extract

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Abstract:

The conventional therapies for cancer have significant side effects such as bone marrow depression, alopecia, etc., leaving the patient functionally and psychologically handicapped, subsequently leading to social isolation. The current chemotherapeutic agents fail to meet the ideal requirements for cancer treatment. Silver nanoparticles, especially green synthesized, have recently attracted remarkable interest for use in cancer nanomedicine. Plants contain different important phytochemicals that can be used as a potential treatment for various ailments, including cancer. The aim of this study is to synthesize silver nanoparticles from the aqueous leaf extract of Oxystelma esculentum and to investigate its anticancer activity on cancer cells. The synthesized AgNps were characterized using UV-Vis spectroscopy, Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), scanning electron microscopy, and energy dispersive X-ray analysis (EDX) techniques. The absence of cytotoxicity against normal human fibroblasts and blood erythrocytes confirms the biocompatible nature of green-synthesised AgNps. In vitro anticancer assays against liver (Hep G2), breast (MCF7), and cervical (HeLa) cancer cell lines, respectively, through the MTT assay confirm its potent anticancer action. The results of the present study give experimental proof that Oxystelma esculentum-mediated green synthesized AgNps could serve as a promising anticancer agent to overcome the limitations of existing conventional cancer chemotherapeutics.

Epidemiology of Hepatitis B, C and HIV in Gastrointestinal Tract Patients of Muzaffarabad Azad Jammu and Kashmir, Pakistan

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Abstract:

Hepatitis B and hepatitis C are basis of high death rates, particularly in people infected with HIV disease. Hepatitis B and C are related in conveyance by the sexual contact, erect from mother to unborn young and by injections within veins. Main conveyance of hepatitis C is route of a blood communication. Weakened immune system cause dangerous influences of hepatitis C virus. Study was conducted for consideration resources of HBV, HCV and HIV in general inhabitants of Muzaffarabad, Azad Jammu and Kashmir-Pakistan. Hepatitis B, hepatitis C and HIV are tested by ELISA and ICT were consumed. Immunogenic was noticed for hepatitis B and for hepatitis C, HCV, HIV protective immune proteins were noticed. PCR for HBV-DNA and RT-PCR for HCV-RNA also finalized. Almost 500 patients registered in this analysis from which 33% caught positive for HBV, all were male and no female was positive after final acceptance by PCR. 66% HCV positive persons were found, 5.5% were male and 94.5% were female. No HIV positive person was found by technique of PCR. 20-30 age groups was most dominant in HBV, HCV HIV. Conclusion: Genetic constitution 1a is more dominant in HCV comparable to genetic constitution of 2b in HBV.

Keywords: Gastrointestinal Tract; HBV; HCV; Hepatitis B; Hepatitis C; HIV; Kashmir; Muzaffarabad Azad Jammu; Pakistan; Prevalence.

EFFECT OF PREBIOTICS & IRON FORTIFICANTS ON SERUM FOLATE LEVELS IN IRON DEFICIENT FEMALE SPRAGUE DAWLEY RATS

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Abstract:

Folate deficiency is extremely common worldwide. Several interventions have been proposed to manage this issue effectively, but none has significantly reduced its prevalence globally. Keeping this in view, a study was designed to elucidate the effect of prebiotics & iron fortificants on serum folate levels in iron deficient female Sprague Dawley rats. To serve the purpose, n = 126 female Sprague Dawley rats aged 6 to 8 weeks were obtained from the National Institute of Health, Islamabad. Two prebiotics namely Inulin and Galacto-oligosaccharides and two iron salts including Ferrous sulphate and Sodium Iron EDTA were used in varying dosages to prepare various types of feed to be fed to rats. Initially, iron deficiency was induced among rats by feeding them with carbon tetrachloride which is an iron binder. After that, rats were orally fed with fortified feed daily for a period of three months. Blood samples of overnight fasted rats were collected at 0, 30th, 60th and 90th day of the trials. Serum folate levels of the rats were determined using the standard protocol. The results of the study showed that iron fortificants and prebiotics significantly improved the serum folate levels in female rats. The current

study indicated that prebiotic and iron fortification could be effective in addressing folate deficiency. However, more research studies are needed in this regard.

Keywords: Prebiotics, Iron Fortificants, Serum Folate, Folate Deficiency, Public Health

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A REVIEW ON THE EFFECT OF DIET & OTHER LIFESTYLE INTERVENTIONS IN MANAGEMENT OF CARDIOVASCULAR DISEASES

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Abstract:

Cardiovascular diseases (CVDs) are known to be the leading cause of mortality claiming approximately 17.9 million deaths each year. Cardiovascular diseases may be highly preventable if a healthier lifestyle including appropriate dietary choices, regular physical activity, and stress management is incorporated on a regular basis. The objective of the present review was to identify the most effective interventions which could prevent cardiovascular diseases. Online databases including PubMed, Google Scholar and Science Direct were thoroughly researched for relevant scientific articles. After applying the inclusion and exclusion criteria, n = 24 studies were made a part of the current review. The results of the review revealed that diet does have a significant impact on the reduction of incidence of CVDs. Increase in dietary consumption of polyunsaturated fatty acids and monounsaturated fatty acids while reducing saturated fats came out to be the most effective dietary intervention. Similarly, it was revealed that people who indulged in regular physical activity had significantly lower chances of development of CVDs, compared to those who did not. The review concluded that lifestyle interventions could play a very important role both in the prevention and delaying the onset of cardiovascular diseases.

Keywords: Cardiovascular Diseases (CVDs), Diet, Physical Activity, Lifestyle Interventions

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ASSESSMENT OF DEPRESSION AND QUALITY OF LIFE IN ADMITTED PATIENTS OF BLOOD CANCER

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Abstract:

Cancer is the second leading cause of death following heart diseases, causing 10 million deaths per year globally whereas in Pakistan reported death exceeds more than one million yearly. Cancer patients face psychological and social stress, affecting their quality of life and causing hopelessness. In countries like ours, being ill with an exceptionally expensive disease concerning financial restraints of therapy, further

add up guilt and self-blame. Current study was planned to assess quality of life and depression level of blood cancer patients undergoing chemotherapy.

A cross-sectional study with convenience sampling was conducted in cancer wards of hospitals in Karachi during the periods from March to June 2022. Standardized BDI1 and N-SAS2 was incorporated in the study. Data was analyzed using SPSS-20 with $P < 0.05$ considered significant.

Patients with Acute myeloid leukemia, chronic myeloid leukemia and multiple myeloma were included in the study. According to depression analysis severe depression was found in 90% of the participants. The assessment of life quality was bad for 79 % of the participants. A strong association was found between depression and quality of life as there was 2 times more risk to develop severe depression with bad quality of life. ECOG3 status was strongly associated with quality of life ($\chi2 = 19.67$, $p < 0.001$) as well as depression ($\chi2 = 46.66$, $p < 0.001$). Interestingly despite having severe depression and bad quality of life, generally participants showed a positive outlook towards life and their suicide thoughts were under strong guard, probably due to increased religious followings in the patients.

This study concludes that cancer especially blood cancer is affecting the life and psychology of the patient but a positive view of life, kind gestures and empathy of the care giver can improve the patient's life to some extent.

KEYWORDS: Cancer, Chemotherapy, Quality of Life, N-SAS, BDI

Abbreviation

1 BDI – Back's Depression inventory

2 N-SAS – Nightingale Symptom Assessment Scale

3 ECOG – Eastern cooperative oncology group performance

TO COMPARE THE EFFICACY OF SINGLE HIGH DOSE AND SINGLE STANDARD DOSE VITAMIN D3 THERAPY IN PAINFUL DIABETIC NEUROPATHY

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Abstract:

The international study reveals a common deficiency of vitamin D among individuals with peripheral diabetic neuropathy, leading to the exploration of its potential pain-alleviating effects. Despite existing evidence on the positive impact of vitamin D supplementation on pain reduction, there is limited knowledge specific to Rawalpindi, Pakistan. Thus, our study aims to investigate whether an increased intake of vitamin D can effectively alleviate painful diabetic neuropathy within a hospital setting.

The objective is to assess the efficacy of a single, substantial intramuscular dose of vitamin D3 in comparison to the conventional daily recommended dosage for relieving pain associated with diabetic

neuropathy. This randomized controlled study, conducted at the Department of Medicine, BBH Rawalpindi, spanned six months and included 64 eligible patients split into two groups.

Results indicate that the mean age, gender distribution, educational background, and weight of patients in both groups were comparable. Notably, patients receiving the single high dose of vitamin D3 experienced a statistically significant reduction in pain scores compared to those on the standard dose, as evidenced by a p-value<0.001. Additionally, the pain status assessed through the Short Form McGill Pain questionnaire revealed a significant improvement in distressing, discomforting, and horrible pain categories in the high-dose group.

While both groups experienced pain relief, the group receiving the high dose exhibited a more pronounced reduction. The conclusion drawn from the study is that a single intramuscular high dose of vitamin D3 proves more effective in reducing diabetic neuropathy pain compared to the standard dose.

In summary, this research contributes valuable insights into the potential benefits of vitamin D supplementation tailored to the Rawalpindi population, offering a promising avenue for improving the management of painful diabetic neuropathy.

Keywords: Diabetic, Neuropathy, Single, Intramuscular, Standard dose, High dose, Vitamin D.

Impact of Psychosocial Factors on Health-Related Quality of Life in Patients with Coronary Heart Disease

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Abstract:

Introduction: Impact of psychosocial factors like anxiety, depression, perceived social support, and cardiac self-efficacy (CSE) on health-related quality of life (HRQoL) in patients with coronary heart disease (CHD) is assessed.

Methods: A cross-sectional descriptive study was carried out from January-June 2023 by conducting interviews with CHD patients. We used tools like Hospital Anxiety and Depression Scale (HADS-A and HADS-D), Multidimensional Scale of Perceived Social Support (MSPSS), 5-item Perceived Efficacy in Patient-Physician Interaction Scale (PEPPI-5), Self-Efficacy for Managing Chronic Diseases 6-item scale (SEMCD-6), Sullivan's Cardiac Self-Efficacy Scale (SCSES) and EQ-5D-5L questionnaire to assess the anxiety, depression, perceived social support, CSE, and HRQoL respectively. Poisson regression model using log-link function were used for modeling visual analogue scale (VAS).

Results: Results showed a significant decline ($p<0.001$) in anxiety and depression scores leading to improvement in HRQoL ($p<0.001$) after coronary artery bypass graft (CABG). An increase in MSPSS ($p=0.004$), PEPPI-5 ($p=0.014$), SEMCD-6, and SCSES-13 scores ($p<0.001$) also resulted in improved HRQoL ($p<0.001$) 1-month and 1-year of post-CABG. Short duration of disease and fewer numbers of medications were positively associated with higher VAS scores ($p<0.001$).

Conclusion: Higher anxiety and depression lower perceived social support, poorer patient physician interactions, and high number of medications predicted lower HRQoL.

Keywords: Anxiety; Cardiac self-efficacy; Depression; Perceived social support; Health-related quality of life

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Phytochemical Analysis and in Vitro Evaluation of Antibacterial Activity of Zanthoxylum armatum and Datura Stramonium found in District Poonch Azad Jammu And Kashmir Pakistan

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Abstract:

Medicinal plants earn the interest of world due to their tremendous effects on various infectious agents that cause various disorders in human being and having remarkable resistance against various antibiotics which possessing many side-effects to human health along with resistance against them by diseases causing agents. Both developing and developed countries are transferring their interest towards the medicinal plant for preparation of drugs by using natural plants and plant products. Medicinal plant are serving human from their history of life on earth. Initially plants are serving man as their appetite reliver and then to treat them to escape them from various infections. Naturally occurring plants are now a days cultivated in regions of world where plants are not found naturally due to medicinal purpose and their well understood effects on human health with very minor or no side effect. Current study is think out to evaluate the anti-bacterial activity of Datura stramonium seeds and leaves and fruits of Zanthoxylum armatumDC in vitro and also work out for their chemical constituent in Hydro-Methanolic extract in 70-30 combination. Hydro-Methanolic extract of Datura stramonium seeds and Zanthoxyllum armatum leaves and fruits crude extract exhibits the anti-bacterial activity against selected bacteria Klebsiella, bacillus, staphylococcus aureus, E.coli, proteus vulgaris including gram-positive and gram-negative stains in dose depended manner by using agar well diffusion method. Evaluation of phytochemicals analyzed exhibits the presence of several phytochemicals including alkaloids, volatile oils, steroids, proteins, starch, amino acids, tannins, saponins. Work out for evaluation of phytochemicals and invitro anti-bacterial activity confirms that these two plants having anti-bacterial activity and a and also contain severalphytochemicals.

A Cross-Sectional Exploration of Common Antibiotic Misuse – Understanding Practices, Perceptions, and Public Awareness.

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Abstract:

Background: The study aimed to evaluate health literacy, knowledge, perception and misuse practices of antibiotics among the residents of Karachi.

Research design and methods: An observational cross-sectional study was conducted between October 1st and December 31st, 2023. The study encompassed a sample of 300 participants.

Results: The study revealed that there is significant association between the level of education of the Karachi residents and their approach towards Antibiotics. Participants that have adequate health literacy were able to recognizing the antibiotics after reading the name of medication, can differentiate between bacterial and viral infection and are aware that the misuse of antibiotic can lead to antibiotic resistance.

Conclusions: Higher levels of adequate health literacy were observed in those involved in the medical field and those with higher educational levels. The prevalence of self-medication with antibiotics among the Karachi population was low. These findings highlight the importance of improving health literacy, promoting responsible antibiotic use, and encouraging proper disposal practices among the population.

Milk thitsle in liver diseases: A review

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Milk thistle in liver diseases: A Review

Abstract:

Background: Now a days, herbal products are gaining alot of popularity, mostly among those with chronic diseases. Active constituents can be extracted from herbal plants for therapeutic purposes, and can be sold as teas , extracts , tablets , capsules etc. By different techniques active ingredients can be extracted out from plants leaves, bark, roots, seeds or flower for medicinal purposes. Silybum marianum is a medicinal plant whose therapeutic history dates back to 2000 years ago and was use as hepatoprotective medication.

Methodology: A systemic research was conducted using search engines including Science direct, Google scholar, Pub med, Health line, Scopus data bases.

Results:Milk thistle is use to support healthy liver functions. It is used for hundreds of years for the treatment of different liver diseases like hepatitis, liver cirrhosis, fatty liver and to protect liver from toxins, Act as antioxidant, anti-inflammatory, antifibrotic substance.

Conclusion: Due to its therapeutic properties in various liver diseases it can become a hallmark in enhancing overall quality of health.

Keywords: Liver, milk thistle, herbal plant

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Abstract:

Introducing a revolutionary solution to boost your energy and focus – caffeine tablets! Crafted to replace traditional tea or coffee, these tablets are perfect for individuals seeking mindfulness and alertness without the hassle of brewing. Our goal is to redefine your energy-boosting experience, prioritizing quality, convenience, and your well-being. This sustained-release formulation aims to provide a longer-lasting effect compared to immediate-release caffeine tablets, which release caffeine rapidly into the bloodstream.

Each tablet is composed of 50 mg of Dibasic Calcium Phosphate, 150 mg of caffeine, along with Stearic Acid, Cellulose Gum, Silica, Magnesium Stearate, Methylcellulose, and Glycerine. What sets us apart are the added benefits: heightened alertness, economic value, hassle-free consumption, and a stomach-friendly formula that avoids irritation.

Here are the convincing points:

1. *Economical Advantage:* Caffeine tablets are a rare find in Pakistan, and when available, they tend to be exorbitantly priced. Our product, however, offers an affordable alternative without compromising on quality.

2. *Stomach-Friendly Formula:* Unlike many competitors, our tablets include calcium, which stabilizes the stomach's pH, ensuring a non-irritable caffeine experience.

3. *Appealing to Non-Coffee/Tea Drinkers:* Perfect for those who are not fond of traditional caffeinated beverages, our tablets provide an easy-to-digest solution for maintaining alertness during exams and work hours.

4.*Sustained release* is achieved upto 8 to 12 hr , stable.

Make the switch to our caffeine tablets – a smart, cost-effective, and stomach-friendly choice for your daily energy needs.

Evaluating the effect of sunflower seeds in treatment of anemia

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Abstract:

Iron deficiency anemia is one of the widespread problems in girls and children of developing and non-developing countries. The major risk factors include decreasing the number of red blood cells. Increase

the destruction of red blood cells in the body. The general consequences of anemia in girls are the disturbance in immune function, higher the risk of infection and irregular menstrual cycles. Iron deficiency occurs when the food we consume is low in iron content, whereas the iron level is optimum in individuals who consume more vegetables in their eating routine. The increasing occurrence of anemia in girls is additionally the real reason of poor pregnancy status, poor school performances and low income. Sunflower seed milk has a functional worth against anemia. Sunflower seed due to its high iron content along with other minerals was analyzed against iron deficiency. Subjects were divided in groups and analyzed. In this study we gave the 250 mL of sunflower seed milk to the anemic girls. The girls were then analyzed for Hb level, TIBC, MCV and serum Ferritin. The results depicted that the Hb content in group 1,2 and 3 respectively is increase from 9.8-11.8, TIBC content in group 1,2 and 3 respectively increase from 240-254, MCV content in group 1,2 and 3 respectively increases from 69-82 and serum Ferritin content in group 1,2 and 3 respectively increase from 132-151. The sunflower seed milk has a functional worth against anemia

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Implementation of machine learning in discovering novel dietary patterns for disease prevention

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Abstract:

In the 21st century, the prevalence of chronic diseases has become increasingly common. Diet plays a pivotal role in both the development and prevention of these chronic conditions. While traditional methods have been employed to analyze nutrition data, they often come with several limitations when it comes to identifying complex and subtle dietary patterns. With the advancement in technology, new techniques such as machine learning offer new opportunities to uncover novel relationships between diet and health outcomes. The studies are required to apply machine learning algorithms in identifying new dietary patterns predictive of disease risk from large datasets of nutritional intake. Nutrition data would be taken from national surveys and cohort studies. Random forest, k-means clustering, support vector machines, and neural networks machine learning algorithms will be implemented to verify their efficiency. The dimensionality reduction techniques and feature extraction will be used to consolidate relevant variables. In validation datasets, models will be instructed to recognize important dietary patterns linked to biomarkers and the prevalence of illnesses like obesity, diabetes, and heart disease. Machine learning will be used to discover new information in the area of nutritional epidemiology. New and novel nutritional profiles and dietary patterns will be discovered that are highly predictive of illness outcomes. Results may refute long-held beliefs and present fresh viewpoints on the connections between nutrition and disease to influence dietary recommendations. Big nutritional data can be used to derive new insights using machine learning. Advanced analytics can improve our knowledge of how nutrition affects health and disease. New information could guide public health initiatives aimed at preventing chronic diseases as well as personalized nutrition advice.

Keywords: Machine learning; novel dietary pattern; chronic diseases; advanced analytics; dietary profiles prediction

The potential of Sauerkraut as functional food

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Abstract:

Functional foods are the foods that provide surplus health benefits in addition to providing nutrients. Sauerkraut is an important traditional vegetable product used since ancient times. Sauerkraut is first used 2000 years ago in China. It is prepared by fermentation of cabbage primarily by hetero-fermentative lactic acid bacteria. The fermentation process serves functional foods purpose. This process helps in the preservation of cabbage at room temperature and boosts absorption of nutrients. The addition of different concentration of salt influences physicochemical, microbial count and sensory characteristics. Sauerkraut has extraordinary nutritive and phytochemical properties along with epidemiological traits. It contains carbohydrates, dietary fiber, minerals and is rich in vitamins and phytochemicals. Phytochemicals includes the phenolic compounds and glucosinolates (GLS). For improving nutritional profile, Glucosinolates plays a vital role by imparting flavor and odor due to numerous metabolites and possess anti-cancerous properties. Sauerkraut is a good source of antioxidants particularly vitamin C which range from 14.7 mg to 75 mg per 100g fresh weight and phenolic compounds from 0.44 to 1.06 mg gallic acid equivalents per 100g fresh weight, protecting against oxidative stress. Thus, acts as anti-diabetic, anti-atherosclerotic and anti-inflammatory agent. This fermented dish is a rich source of probiotics, which promotes the growth of beneficial bacteria and enhances health of gut by preventing constipation, diarrhea and boosts immunity. Sauerkraut is low in calories, fat and high in dietary fiber makes it an excellent food choice for weight loss. So, sauerkraut stands out as a nutritious food option among different varieties and its inclusion in fruit salads and savory and its adaptability in casseroles, soups and stews.

Therapeutic effect of green tea on alzheimer's disease

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Abstract:

Several studies show that Alzheimer's disease is the most prevalent progressive neuro-degenerative disorder characterized by dementia and cognitive impairment accounting for 60-80% of dementia cases globally. Major pathophysiological mechanisms involved in the progression of AD are oxidative stress and chronic neuro-inflammation. In many studies, the lifestyle pattern, such as diet, is being considered a potential factor for primary prevention of Alzheimer's disease. Green tea (from the plant Camillia senesis) is one of the most consumed beverages worldwide due to its anti-inflammatory and antioxidant components. Epigallocatechin-3-gallate (EGCG) is the most significant catechin polyphenol found in green tea. It has been reported to exhibit neuro-protective effects such as anti-inflammatory, inhibition of beta-amyloid aggregation, anti-apoptotic and anti-atherogenic properties. Many epidemiological

studies has been reported regarding the therapeutic effect of EGCG in the primary prevention and treatment of Alzheimer disease. As concluded by a pilot study, cognitive performance was improved in subjects suffering from cognitive dysfunction that were given green tea 2g/day (approximately 2-4 cups of tea) for 3 months. Despite having evidence that green tea is associated with a reduced risk of cognitive decline and Alzheimer's, clinical evidence is still insufficient. This can be associated to insufficient data regarding bioavailability of EGCG in animal and human models. In-vivo studies suggested that frequent EGCG administration in animal models result in its bioavailability in brain whereas in human subjects, it was unable to reach brain. In order to evaluate and confirm the therapeutic effect of green tea along with the long-term effect of EGCG on cognitive functions, well-designed clinical trials using standardized methods are necessary.

Key Words: Alzheimer's disease, oxidative stress, green tea, anti-inflammatory, EGCG, cognitive performance.

Immunomodulating properties of oats (Avena sativa): a neglected natural functional food

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Abstract:

Immunity can be referred to as the mechanism of the immune system by which it protects and strengthens the body against various diseases and infections. Immunity has three forms innate__ first-line immunity includes skin as a barrier to avoid the entry of foreign invaders, adaptive__ forever immunity which protects from future infections of microorganisms, and passive__ short-term immunity which happens in response to the reception of antibodies. Malnourishment at any age is directly related to certain infections and immune deficiencies but undernutrition is the major cause of compromised immune systems on the planet. Nutrient inadequacy and immune deficiency both are interrelated, when there is consideration of nutrient deficiency, it leads to immunosuppression as well and when immunity is compromised or any infection occurs it causes nutrient loss which ultimately results in undernutrition and poor nutritional status. Macro and micronutrients obtained from plant sources play a crucial role in boosting the immune system. Oats (Avena sativa) are immunomodulating whole grains having an abundant amount of immune booster nutrients in its 100 g like β glucan generally called dietary fiber (2-8 g), copper (0.4 g), iron (4.25 g), selenium (28.9 µg), zinc (3.6 mg), and glutamic acid (2.8g). β-glucan prevents mucin from being ingested by gut microbiota, keeps the gut microbiota in balance, acts as a substrate for small chain fatty acids that maintain the integrity of the gut are responsible for the differentiation of T cells, and protect the gut from infection. The immunomodulator minerals (iron, zinc, selenium, copper) act as cofactors for catalases, and superoxide dismutase (antioxidant enzymes) to control the propagation of immune cells and stop the attacks of reactive oxygen species. Glutamine is derived from glutamic acid which synchronizes the spread of white blood cells (neutrophils, monocytes, lymphocytes) and is a vital element for the formation of some cytokines like TNF-α, IL-6, and IFN-γ. Oats overall maintain immune health and provide defense against chronic infections and serious

illnesses. FDA and EFSA recommend a 40 g/day serving of oats for better utilization of immunity booster nutrients.

Keywords: Immunity, malnourishment, immunomodulating, microbiota, cytokines

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Synergistic effect of Ascorbic Acid and Iron Supplementation against Postpartum Anemia and Oxidative Stress Mitigation

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Abstract:

Iron being the fourth major mineral present on earth , despite its abundance its deficiency is figured out as a leading health related issue in post-delivery complications worldwide nowadays. Which is termed as postpartum anemia. This is a multi factorial pathogenic condition etiologically determine by decrease blood production which fails to fulfill body requirement result in severe health related complications such as antenatal iron deficiency, inflammation, defective erythropoiesis and hemolysis other factors which engender this deficit condition included poor dietary intake,low socioeconomic status,parity ,immoderate blood loss during and after delivery,lack of preventive strategies such as early supplementation and screening.Oxidative stress a condition characterized by imbalance in antioxidant level and oxidative agents is consider as a major comorbidity in iron deficiency anemia.It majorly target oxygen carrying cells erythrocytes in our body .Effective and efficient strategy to combat with this state is to assess oxidative agent and antioxidant levels within body.Vitamin C acts an antioxidant to decrease oxidative stress as well as enhance absorption of iron from non heme source ultimately increases maternal iron stores as it convert oxidation state of iron from insoluble state (Fe3+)ferric iron to soluble state (Fe2+) ferrous iron.Aim of this study is ;

- To determine the role of oxidative stress in denouement of anemia.
- To determine the combined effect of vitamin C and iron supplementation during postpartum anemia on iron status and oxidative stress .

Methods: Randomized controlled trial was conducted in THQ hospital Muridke,Pakistan .After ethical permission, consent forms were signed by all participants.A total 40 patients were included.Assessment of selected patients was done at the start of study .Data that was collected included Demographics,PBAC scoring, CBC ,Serum iron ,Serum ferritin,Serum vitamin C ,MetHb% ,TAC and Iron based FFQ .Participants were then divided into 2 groups that were observed for 45 days.The control group received iron supplementation (iron poly maltose 100g) 1 tablet per day for 45 days.And experimental group received both iron and vitamin C supplementation (iron poly maltose 100g along with chewable vitamin C 500mg) 1 tablet of both supplements per day in a single dose.After 45 days post analysis of CBC,serum iron ,serum ferritin and serum vitamin C, MetHb% and TAC were again made.

Results: After statistical analysis by applying paired T test Mean±SD of Hb of experimental and control group was 3.0±0.59 and 1.2±0.47 with p value < 0.05.Mean±SD HCT in experimental and control group was 9.5±2.7 and 3.5±2.9 with with p value < 0.05 .Mean±SD of MCV in experimental and control group was 20.6±13 and 7.3±7.26 with p value < 0.05 respectively..Mean±SD of MCH in

experimental and control group was 5.2±2.9 and2.8±3.7 with p value <0.05 .Mean ±SD RBCs count in experimental and control group was 0.462±0.4 and 0.45±0.2 with p value <0.05 .And Mean±SD of serum iron level of experimental and control group was 74.8±9.9 and 51±9.3 respectively with p value < 0.05.Mean±SD of serum vitamin c levels of experimental and control group was 1.2±0.5 and0.3±0.2 respectively with p value< 0.05.Mean±SD of Methb % in experimental and control group was 0.97±0.04 and1.3±0.35 respectively with p value < 0.05.Mean±SD of TAC in experimental and control group was 1.75±0.9 and 1.58±0.12 respectively with p value < 0.05. Mean±SD of serum ferritin levels in experimental and control group was 68±16 and 47±9.6 respectively with p value < 0.05.

Conclusion: Vitamin C and iron considerably increases Hb ,HCT,MCV,MCH,serum iron,TAC and serum ferritin levels and decreases MetHb% in women with postpartum anemia.But the improvement in RBCs count was not significant.

Exploring The Analgesic Effect Of Black Cumin Seeds Oil In Patients Of Rheumataoid Arthritis And Osteoarthritis: A Randomized Controlled Trial

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Abstract:

Background: Arthritis, is inflammation or swelling of one or multiple joints, and is most common cause of disability. Rheumatoid arthritis, gout, and osteoarthritis are the three most prevalent types of arthritis. Pain, stiffness, swelling, and aching in or near joints are typical symptoms .Black cumin (Nigella sativa) seeds contain thymoquinone, which possess many nutritional and medicinal properties

Objective: To determine the effect of oral Nigella sativa seeds oil in reducing pain and inflammation in patients of osteoarthritis (OA) and rheumatoid arthritis (RA).

Methods: During this randomized clinical trial, 80 patients of arthritis were enrolled which included osteoarthritis (n=40) and rheumatoid arthritis (n=40). Each group was further divided into 2 groups, experimental group (n=20) and controlled group (n=20).For duration of 8 weeks both experimental groups received 500mg of black cumin seeds oil capsule twice a day along with prescribed medicine, whereas controlled group continued their routine treatment. Pain, stiffness and physical activity were assessed by WOMAC and VAS scale. Along with that ESR and CRP blood markers were used to gauge inflammation at 0, 30th and 60th day.

Results: Results indicated time dependent improvement in pain and inflammation over the period of 8 weeks in both osteoarthritis and rheumatoid arthritis patients. When compared with controlled group, experimental groups of both diseases indicated significant reduction in pain, evaluated through WOMAC scale (p= 0.001) and VAS scale (p=0.001) and inflammation that was evaluated through blood markers ESR (p= 0.009) and CRP (p= 0.011).

Conclusion: N.sativa seeds oil improved pain and inflammation in both osteoarthritis and rheumatoid arthritis patients.

Elevating The Palate: A Comprehensive Overview Of The Nutritional Profile Of Ostrich Meat

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Abstract:

Ostrich meat has high nutritive value and can be an important livestock industry. Ostrich meat has similar nutritional value as that of beef. Meat of older ostrich has more fat content than meat of younger ostrich. Ostrich meat has low intramuscular fat thus can be recommended to overweight people. Ostrich meat has unsaturated fatty acids and can be used by patients suffering from coronary heart diseases. Raw ostrich meat has more iron, zinc, copper and thiamine content than other meat varieties available for human consumption. Thiamine (vitamin B1) levels are higher in ostrich than in beef or chicken meat. The levels of vitamin B6 and B12 are much higher in ostrich meat than in beef or in chicken. Riboflavin (vitamin B2) and pantothenic acid (vitamin B5) levels are similar in ostrich meat and in beef, while chicken meat is lower in vitamins B2 and B5. Content of vitamin E is highest of ostrich meat followed by chicken meat and beef. Very low sodium content of ostrich meat (32-36 mg/100 g) in comparison to beef (63 mg/100 g) or chicken (77 mg/100 g) can be advantageous for people who have to consume a low sodium diet, for example those suffering from hypertension. Ostrich meat can prove a major component of human diet. The lack of cultural and traditional practices is a major hindrance in the consumption of ostrich meat.

Key Words: Ostrich meat, Intramuscular fat, Hypertension, Coronary heart disease

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Traditional Unani/Ayurvedic system of South Asia, it's current and future treatment prospects and researches

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Abstract:

In South Asia, the traditional Unani/ayurvedic systems are practiced and believed over centuries for various ailments and treatment. The old and traditional formulations in Tibbi pharmacopoeia's, "Mufradats" and "Qarra Badeens" are used as such, without their standardization and optimization studies. Similarly, as per claimants of various herbal industries, regarding their products safety, efficacies and no side effects, there is no such research evidences, discrete logical confirmations for most of the formulations. The current prospective research highlights, the traditional Unani/Ayurvedic systems of South Asia, especially practiced in Pakistan systems. It also upraised the treatment prospects and research progressions, which were enlightened with in modern therapeutics standard approaches. Our current traditional Unani/Ayurvedic and Tibbi Islami needs an extensive research inclination for drugability, standardization, optimization according to the modern standards guidelines and parameters.

Berberine-induced sensitization of metastatic breast cancer to TRAIL treatment

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Abstract:

Berberine has been used historically to treat bacterial and fungal infections and was frequently used to treat cancer-associated symptoms such as diarrhea or even was reported for direct anti-tumor effects. Current studies are showing TNF-related apoptosis-inducing ligand (TRAIL) as one of the promising candidate for treating cancer; however its usage is limited by the developed resistance. In this study we have used Berberine to sensitize breast cancer for TRAIL treatment both in vitro and in vivo. Not only did berberine synergize the action of TRAIL in the TRAIL-sensitive MDA-MB-231 breast cancer cells, but has also sensitized the TRAIL-resistant MDA-MB-468 breast cancer cells for the TRAIL treatment. These interesting findings were further extrapolated in 4T1 breast cancer model in BALB/c female mice. The mechanistic analysis revealed enhanced apoptotic pathway can be the main reason for anti-tumor effect of this combination. Thus, Berberine may be an attractive compound to overcome the resistance against TRAIL-mediated therapy by sensitizing breast cancers. We are currently investigating the molecular mechanism of enhanced TRAIL-induced apoptosis by Berberine treatment.

Histological alteration and hypothyroidism in induced PTU and the protective function of poly-herbal formulation

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Abstract:

Hypothyroidism is one of the most frequent challenging disorders, with around 1.6 billion people globally at risk. Hypothyroidism affects 9.4% of Pakistan's population, according to research. In this study protective role of poly-herbs (PHF) again induce hypothyroidism was evaluated. Commiphora wightii, Wathena somnifera, Moringa oleifera, Trigonella foenum graecum, was used in polyherbal formulation. Ethanolic extracts of Guggul (Commiphora wightii), Ashwagandha (Wathena somnifera), Moringa (Moringa oleifera), Fenugreek (Trigonella foenum graecum) was prepared. A total of 18 rabbits was divided into three groups and each group contained 6 rabbits (n=6). Group A was a control group that received a normal diet and mineral water, while Experimental Group Rabbits were divided into two Groups (C and D experimental groups) Experimental group induced with a Propylthiouracil (PTU) (50 mg/kg/day) for 21 days, Group C was given 500 mg/day/oral PHF and Group C was given Thyroxine 50 mcg/daily for 45 days. Thyroid profile was assessed by using the Mini-VIDAS system. The Thyroid profile was assessed before starting the study, after the induce 21 days, and experimental after 45 days. The result was analyzed using one-way analysis of variance (ANOVA). The T3 (triiodothyronine), T4 (free thyroxine) was very significantly increase (p-<0.001) in the hypothyroidism treatment group (PTU-PHF) and also showed that the TSH level was very significantly decreased ($p<0.001$) in the hypothyroidism experimental group (PTU+PHF) as compared to the experimental group-D (Thyroxine). Histological result shows significant improvement in group C (PHF) in loss of follicular epithelium, loss of Colloid, and Congestion of vessels improvement (83.3%).

Evaluating the Anti-hyperlipidemic and Anti-Diabetic Potential of Ethanolic Leaf Extract from Cymbopogon Jwarancusa in Diabetes and obesity management.

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Abstract:

Development of a hyperlipidemic state, the underlying cause of obesity, is significantly influenced by dietary changes, genetic factors, and lifestyle modifications. Research has established a direct correlation between elevated lipid blood profile levels and various health issues, including coronary artery disease (CAD), stroke, angina, atherosclerosis, cerebral palsy, hypertension, diabetes mellitus, and liver fibrosis. The initial step in managing cholesterol levels involves adopting a healthy lifestyle, including the control of a fat-rich diet, weight loss, abstaining from smoking, and engaging in proper aerobic exercise. If lifestyle modifications prove insufficient, the next approach recommended is medical intervention. The primary pharmaceutical choice for hypercholesterolemia management is HMG-CoA reductase inhibitors, commonly known as statins. Statins are associated with the common side effect of rhabdomyolysis, and other adverse effects include myalgia and elevated hepatic transaminase levels, limiting their use. Among the commonly used anti-hyperglycemic medications are sulfonylureas alongside biguanides, alpha-glycosidase inhibitors and thiazolidinediones. Hypoglycemia is a frequent side effect of sulfonylureas.

Alongside pharmaceutical interventions, nutraceuticals and herbal preparations are utilized for managing glucose levels. These natural alternatives are not only cost-effective but also do not necessitate a prescription. Cymbopogon Jwarancusa is an aromatic grass known by the names of rusha grass and khavi grass of family Poaceae. The traditional medicinal use of Cymbopogon Jwarancusa encompasses various plant parts, with a primary focus on the medicinal benefits derived from its shoots and roots. The evaluation of hyperlipidemia and hyperglycemia involved the measurement of body weight, serum lipid profile, and fasting blood glucose levels. The administration of ethanol leaf extract from Cymbopogon Jwarancusa demonstrated a notable and dose-dependent decrease in body weight, lipid parameters, and blood sugar levels. Consequently, it can be inferred that C. Jwarancusa contributes to the amelioration of hyperlipidemic and hyperglycemic conditions, showcasing its potential in reducing the risk of obesity related issues.

Synthesis and Characterization of Eco-Friendly Nanoparticles, Investigating the Biological and Pharmacological Properties of Tanacetum umbelliferum for Hyperuricemia and Gout Management

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Abstract:

Tanacetum umbelliferum Boiss. is traditionally claimed to possess competitive potential in the management of gout and hyperuricemia, whereas scientific evidence is lacking. Therefore, present study

was designed to optimize conditions using computational techniques and confirm the safety and to explore the effects of T. umbelliferum roots hydro-ethanolic extract and its subsequent fractions (1-butanol, chloroform and n-hexane) on gout and hyperuricemia using in vitro and in vivo experimental techniques. In vitro evaluation of antioxidant, anti-inflammatory, anti-arthritic and Xanthene oxidase inhibitory potential of test samples showed significant ($p<0.05$) results. Moreover, T. umbelliferum was subjected to synthesis of green nanoparticles of Zinc Oxide. The standard techniques including UV-visible and FTIR, were employed for the characterization of ZnO-NPs. Sample gave λmax peaks in between 350-360 nm (UV-vis spectra). Crystalline nature, particle sizes and morphological study of the ZnO-NPs was established by the analysis of SEM, XRD, and EDX results. Antioxidant , anti-inflammatory and anti-arthritic potential were performed by ZnO-NPs where percentage inhibition of antioxidant (36.36%), anti-arthritic (36.51%) and anti-inflammatory activity (49.93%) was significant. For acute and sub-acute study of toxicity, 2000 mg/kg b.w dose was evaluated via biochemical, hematological, and histopathological factors. The anti-hyperuricemic potential of extract was inspected through serum uric acid level on hyperuricemic rats induced by potassium oxonate. For in vivo anti-hyperuricemic study, T. umbelliferum extracts at optimized doses (50, 90,130 mg/kg b.w) significantly reduced the serum level of uric acid as 3.1, 2.7 and 1.9 mg/dl at 14th day of treatment. All the results presented significant p values <0.05 in dose dependent manner in comparison to standard controls. Therefore, the research hypothesis-1 i.e. test samples of T. umbelliferum, possess significant potential for the management of hyperuricemia and gout comparable to standard drugs' has been accepted while null hypothesis has been rejected by the experimental study. It could be concluded that selected medicinal plant T. umbelliferum have significant therapeutic response to address the healthcare problems and is a safe and effective alternative therapy for the management of hyperuricemia and gout.

***** *The End* *****