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• Medical & Health Sciences

Session Chairs:



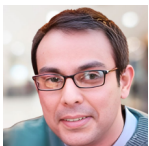
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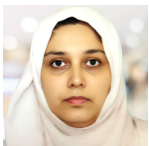
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Mechanistic Insights and Novel Antiepileptic Therapeutic Targets Revealed by Natural Products

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Presenter

Sobia Tabassum
International Islamic
University, Islamabad

Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Natural products are being used as promising therapeutic agents alternative to conventional drugs for treating neurological disorders. The modern medicines in practice presented many concerns including drug resistance, variable individual response and drug interactions. These side effects can be attenuated by harnessing phytotherapeutic agents. The objective of the study was to elucidate antiepileptic activity of *Withania coagulans* along with other selected natural products. The antiepileptic activity of *Withania coagulans* was analyzed by using PTZ induced mice model. The *W. coagulans* extract at the dose of 200 mg kg⁻¹ and 300 mg kg⁻¹ significantly decreased the seizure intensity, frequency and increased the latency of PTZ-induced seizures and the effect was found dose dependent. Results demonstrate that the expression of p-TNF- α and nuclear factor kappa B (p-NF- κ B), in the cortex and hippocampus of the brains tissues were down regulated by the *W. coagulans* through reduction of neuroinflammation and surviving neurons showed intact morphology in treated group in contrast to PTZ group. Current study demonstrates that *W. coagulans* possess highly significant neuroprotective potential with respect to drug dose and expression of inflammatory cytokines p-TNF- α and p-NF- κ B in the cortex and hippocampus of the brains tissues because extract of *W. coagulans* more efficiently down regulate the expression of p-TNF- α and p-NF- κ B. The antiepileptic potential of *W. coagulans* is due to presence of phytoconstituents including Withanolides compounds. Fourier Transform Infrared Spectrophotometer (FTIR) give clue of specific class of compounds present in *W. coagulans* extract through their functional groups. The Gas Chromatography-Mass Spectrometry (GC-MS) revealed the presence of a number of significant quantities of phytoconstituents in *W. coagulans* responsible for observed neuroprotective effect. This study focused on exploration and development of neuroprotective drugs from unnoticed natural sources which combat the problems of drug resistance and drug interaction.

Keywords

Biomarkers; Natural products; Epilepsy; Neuroinflammation; *Withania coagulans*



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Islet of Langerhans in Rodents and Primate Pancreas: Anatomical and Biochemical Differences

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Presenter

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Diabetes mellitus is a global problem and affects a significant number of people. Pakistan has been ranked as the number one country in the 2023 global diabetes index with around 26% of the population suffering from diabetes. Research efforts from national institutes and public sector universities are trying to cope with the growing number of patients and devising a national plan for diabetes prevention and recovery. Rodent models (rat, mouse) are currently considered the gold standard in the field of diabetes research because of their excellent use as diabetic/hyperglycemic models. Rodent/murine models offer cost-effective, easily managed and biologically sound animal models to study diabetic conditions with supraphysiological levels of glucose. Non-human primates (NHPs) offer a more relevant model for humans in terms of disease pathobiology but because of their high maintenance and management costs, they are seldom opted for biological research in the public sector. Interestingly, strictly speaking about the diabetic animal models, a substantial amount of differences exists at the cytoarchitectural levels as well as subsequent metabolic signatures between rodent and primate islets of Langerhans. The current presentation will discuss in detail the specific anatomical and metabolic differences that exist between rodent and primate animal models which are highly relevant to humans in terms of the basic pathology of diabetes and the possible misinterpretation that might arise because of the fundamental difference between these two species.

Keywords

Diabetes mellitus; Non-human primates; Animal models; Diabetic; Langerhans



Effectiveness of Buspirone in Ameliorating Nicotine-Induced Addiction and Related Neurological Deficits

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Presenter

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Buspirone has a recognized effectiveness for the treatment of anxiety without having hypnotic, muscle relaxant and anticonvulsant properties so termed as anxi-selective drug. Reports also showed its significant results in reducing drug addiction such as cannabis and opium, but effects of buspirone on nicotine addiction have not been assessed. Thus, present study purposed to evaluate the impact of administration of buspirone on nicotine addiction induced neurological deficits in healthy young rats. Study based on two groups control, and nicotine further subdivided into sub-groups, buspirone (received buspirone intra-peritoneally at 1 mg/mL/kg), control group (received 0.9% saline), buspirone plus nicotine group (received nicotine addiction along with buspirone), and the buspirone group (received buspirone along with administration of saline). The whole treatment was continued for 14 consecutive days. Body weight and food intake were assessed at the regular intervals and the behavioral examination that was consist of evaluating cognitive assessment (through novel object recognition and Morris Water Maze Test), anxiety-like behavior (through elevated plus maze test), depression (through Forced Swim Test) and locomotor activity (through Open field and Kondzielas inverted screen), were performed. After behavioral analysis, the serum samples of rats were collected for evaluation of total protein, creatinine, triglycerides, glucose, urea and cholesterol to conduct biochemical analysis. The results revealed that the administration of buspirone leads to significant improvement in cognitive function, reduction of depression and anxiety-like symptoms and improvement in locomotor activity as well as reduction in biochemical deficits caused by nicotine addiction was also found as enhanced protein and glucose levels in plasma of buspirone treated rats was observed. Hence, as buspirone is beneficial in improving neurobehavioral and biochemical deficits in addicted rats so it can be suggested in future as a safer therapeutic and preventive approach for ameliorating drug addiction and its reinforcing effects related disturbances.

Keywords

Nicotine; Buspirone; Addiction; Biochemical analysis; Neurological deficits



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Evaluation of Anticancer, Antioxidant and Anti-Diabetic Activity of Silver Nanoparticles using Leaf Extract of *Grewia asiatica*

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Presenter

Hafiz Muhammad Asif
The Islamia University of
Bahawalpur, Bahawalpur

Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Cancer and diabetes are two chronic, diverse, complex and serious illnesses. More than 11 million people die every year as a result of cancer and diabetes mellitus. Recently, a better alternative for the treatment of these fatal conditions has arisen in the form of metal-based nanoparticles (MNPs) that were synthesized in an environmentally friendly manner using plant extracts. The present work examined the anticancer, anti-diabetic and antioxidant effects of the greenly synthesized Silver Nanoparticles (AgNPs) as well as the *Grewia asiatica* Linn. The *G. asiatica* belong to family Malvaceae, leaf extract. The findings demonstrate the colour change of the DPPH solution purple to yellow, strong antioxidant activity shown by the crude extracts ($78.68\% \pm 0.02$) as well as nanoparticles ($81.62\% \pm 0.02$) against DPPH. In addition, even at low concentrations, the AgNPs effectively inhibit the proliferation of human liver (HepG2), cervical (HeLa), and breast (MCF-7) cancer cells with IC₅₀ values of 177.3, 99.8 and $73 \mu\text{g mL}^{-1}$, respectively. Furthermore, the AgNPs have shown better anti-diabetic activity through α -glucosidase and α -amylase inhibition assays ($85.03\% \pm 0.02$ and $75.15\% \pm 0.01$, respectively). Thus, AgNPs were discovered to be an effective therapeutic agent against human breast cancer cell lines (MCF-7), a strong α -glucosidase inhibitor and a free radical scavenger. However, further investigations are required to establish the anticancer and antidiabetic mechanisms of these nanoparticles.

Keywords

Grewia asiatica; Alpha-amylase; Alpha-glucosidase; MTT assay; Silver nanoparticles



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Use of Ganciclovir in Bone Marrow Transplantation Cases

Fakhsheena Anjum and Kashif Ali

Dow University of Health Sciences, Karachi, Pakistan

Presenter

Fakhsheena Anjum
Dow University of Health
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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Cytomegalovirus (CMV) infection is a common complication of immunosuppression in hemato-oncologic patients for bone marrow transplantation. Ganciclovir (GCV) is the first-line treatment for CMV disease but it also has cytotoxic potential requiring monitoring. The aim of this study was to evaluate GCV utilization as per the predefined assessment criteria in the management of CMV in hematology-oncology patients. The data of 24 months was collected both retrospectively and prospectively by a senior clinical pharmacist from the medical record of n= 72 patients of a 75 bedded hematology Oncology institute in Karachi, Pakistan. The standard treatment guidelines adapted from the Lexicomp drug monograph, USP 800 (United States Pharmacopeia) and NIOSH Guidelines were applied to review cases with CMV positive infection and Ganciclovir handling by the pharmacists and nurses. The collected data were categorized and analyzed by using Statistical Package for Social Sciences software, version 16.0. Drug interactions with mycophenolate [n= 23 (54.76%)] and imipenem cilastatin [n= 1 (2.38%)] out of n= 42 cases were noted. Due to development of febrile neutropenia in n= 8 (19.04%) patients, Ganciclovir administration was stopped. It was observed by the senior clinical pharmacist that neither the pharmacists nor the nurses were aware about Ganciclovir handling as per standard treatment guidelines. Ganciclovir utilization in hematology-oncology patients can be improved by following the standard treatment guidelines. To accomplish better patient care, the healthcare team can develop and implement medication utilization evaluation process to ensure safe handling of drugs for use.

Keywords

Cytomegalovirus infection; Hematology-oncology; Ganciclovir; Bone Marrow Transplant; Medication utilization evaluation



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Managerial Needs Assessment of the Primary Health Care Managers Belonging to the War Effected Tribal Areas of Pakistan

Naveed Sadiq

Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan

Presenter

Naveed Sadiq
Khyber Medical
University, Peshawar

Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

The Alma Atta declaration underscored primary health care as vital, focusing on community health issues and serving as the initial contact with the health system. Addressing determinants of health comprehensively, it encompasses physical, mental, and social well-being throughout life, enabling early disease diagnosis and alleviating tertiary care burdens. In the aftermath of the war on terror in Pakistan, a significant number of primary health facilities were forced to close, leading to widespread displacement of the population. The tribal districts faced disruption during the war on terror, prompting a need for primary health care manager assessments post-peace and population return. Subsequent to the restoration of peace, the reopening of health facilities necessitated an evaluation of managerial training needs. In this regard, a cross-sectional study was conducted among primary health managers in the war-affected tribal districts of Pakistan. The research employed a self-administered questionnaire to collect data, and subsequent analysis focused on descriptive statistics. The findings revealed that a staggering 90.8% of the study participants expressed a need for managerial training. Within this cohort, 38.9% identified a requirement for comprehensive training across all managerial domains. Resource management, monitoring, and evaluation emerged as the specific managerial domains that commanded the highest demand for training. Intriguingly, the study did not identify any significant associations between socio-demographic variables and the expressed need for training among the participants. In essence, the majority of primary health managers in the studied region demonstrated a compelling need for managerial training. Recognizing this imperative, the study advocates for the development of tailored training modules that specifically address the identified managerial training needs. The overarching objective is to enhance effective management, which, in turn, holds the potential to elevate the quality of primary health services. This research underscores the importance of strategic interventions aimed at capacity building in the aftermath of conflict, with the ultimate aim of fostering resilient and well-managed healthcare systems.

Keywords

Primary health care; Pakistan; War-affected; Tribal areas; Training need assessment



Assessment of Post-Traumatic-Stress-Disorder Among Flood 2022 Survivors of Sindh, Pakistan

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Presenter

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Type

Oral Presentation

Track

Medical & Health Sciences

Location

Room 1

Abstract

Understanding how flooding impacts people's health and well-being is vital. Survivor effects vary according on age, gender, and history of flooding exposure. In order to ascertain the prevalence of Post-Traumatic Stress Disorder (PTSD) among flood 2022 survivors in Sindh, Pakistan. The current study concentrated on the cross-cultural adaption of the Posttraumatic Stress Disorder Checklist-5 (PCL-5). The purpose of the current study was to assess the stress levels of flood survivors and look into the relationship between sociodemographic risk factors and PTSD. The PCL-5 scale for the DSM-5 was used to assess the stress level. The scales English version was first translated into Sindhi, and then the reverse translation was carried out. The translation procedure was followed by the psychometric analysis. Interviews with flood survivors living in flood camps spread over several Sindhi districts took place between December 1st, 2022, and January 31st, 2023. Cronbach's alpha, which measures the internal reliability of the Sindhi edition of PCL-5, was determined to be 0.714 in the validation results, indicating good tool dependability. The translated version was effectively used to measure PSTD in flood survivors, and it showed that a remarkably high number of people (78.5%) were impacted by stress following the flood in 2022. The prevalence of moderate-level PTSD symptoms among local residents was significantly higher (82%). Verified PCL-5 Sindhi edition was created with future use in mind. It is recommended that flood survivors undergo psychological treatment and rehabilitation in order to mitigate the long-term impact of the flood on their mental health.

Keywords

Post-traumatic-stress-disorder; PCL-5; Sindhi edition; Flood; Pakistan



PROCEEDING Emerging Scientist 2024



Utilization of Magnetic Nanoparticles for Magnetic Hyperthermia

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Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

In this study, we present the synthesis and characterization of cobalt ferrite nanoparticles coated with silica, featuring a core-shell structure suitable for applications in magnetic hyperthermia. The nanoparticles were prepared using the reverse micelle method, and the silica coating was concurrently carried out during their synthesis. We employed various analytical techniques to assess these nanoparticles. Structural analysis was conducted using X-Ray Diffraction (XRD), and the XRD data were refined using the Fullprof Program suite 2k version. Structural parameters were estimated through pattern calculation and profile matching employing the pseudo Voigt function. Transmission electron microscopy (TEM) revealed well-dispersed, nearly spherical core-shell nanoparticles with an average diameter of 17 nm. Fourier Transform Infrared (FTIR) spectrometry confirmed the presence of silica vibrational modes on the cobalt ferrite nanoparticle surfaces. These silica-coated cobalt ferrite nanoparticles displayed superparamagnetic characteristics, with a saturation magnetization of 45.74 emu g⁻¹ determined by vibrating sample magnetometer (VSM) measurements. We evaluated the suitability of these nanoparticles for magnetic hyperthermia by measuring the temperature increase in an aqueous nanoparticle solution subjected to a 260 kHz alternating magnetic field. We found that an optimal nanoparticle concentration of approximately 1.7 mg mL⁻¹ achieved the desired saturation temperature of 42°C, the target temperature for magnetic hyperthermia. The specific absorption rate (SAR) for this sample was calculated to be 27.49 Watts per gram of iron. We also examined the SARs dependence on nanoparticle concentration and magnetic field strength. These findings illustrate the potential of silica-coated cobalt ferrite nanoparticles for applications in magnetic hyperthermia.

Keywords

Cobalt ferrite; Superparamagnetism; Hyperthermia; Specific absorption rate (SAR)



Neuropharmacological Effects of *Moringa oleifera* Seeds in a Mouse Model of Parkinsonism

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Presenter

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Type

Oral Presentation

Track

Medical & Health Sciences

Location

Room 1

Abstract

Parkinson's disease (PD) is a progressive and debilitating neurodegenerative disorder characterized by a triad of motor symptoms i.e.; bradykinesia, rigidity and rest tremors along with non-motor symptoms. Traditionally, treatment involves pharmacologic approaches (levodopa preparations prescribed with or without other medications) and nonpharmacological approaches (such as exercise and physical, occupational and speech therapies). To counter adverse effects of antiparkinson's medications, *Moringa oleifera* (Moringaceae family), containing a variety of beneficial components including phenols, flavonoids, vitamin C, α -tocopherol, b-carotenoids, etc., increasingly used nowadays because of its antioxidant, anti-inflammatory, anti-diabetic, anti-apoptotic and neuroprotective properties. Thus, the present study was designed to evaluate the effect of *Moringa oleifera* in animal models of PD. Group 1 was administered with haloperidol, 1 mg kg⁻¹ i.p.; groups 2, 3 and 4 were given haloperidol along with *Moringa oleifera* in doses of 250, 500 and 750 mg kg⁻¹, by oral route, respectively and group 5 received levodopa 250 mg kg⁻¹ along with haloperidol. *Moringa oleifera* was administered daily, 30 min prior to the administration of haloperidol over a period of 10 days. Behavioral assessments (catalepsy, open field and forced swimming tests) were also performed. After sacrifice, histopathology was done in isolated organs. Results showed significant ($p < 0.05$) decrease in locomotor activity and increase in catalepsy duration in haloperidol-treated group whereas increase in locomotor activity with decrease in duration of catalepsy observed in *Moringa oleifera* treated groups. The results were comparable with levodopa-treated group that also showed significant increase in locomotor activity and decrease in cataleptic behavior. Thus, in our study, *Moringa oleifera* has shown promising results for antiparkinson activity when tested in our selected animal model for PD. Hence, we suggest that *Moringa oleifera* can serve as a lead for novel treatment strategy of PD.

Keywords

Parkinson's disease; *Moringa oleifera*; Open field test; Catalepsy tests; Haloperidol; Levodopa



PROCEEDING Emerging Scientist 2024



Automated Fetal Age Estimation Using Ultrasound Video

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Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

During pregnancy, monitoring the growth and development of the fetus is of utmost importance for ensuring the well-being of both the mother and the unborn child. Fetal ultrasound has long been a cornerstone in obstetrics, offering invaluable insights into the fetal anatomy. Among the various biometric measurements, accurate assessment of fetal head biometry, specifically the biparietal diameter (BPD) and head circumference (HC), is critical for estimating gestational age and identifying potential developmental issues. Traditional fetal head biometry relies heavily on the skill and expertise of sonographers, introducing variability and subjectivity into the measurements. This paper presents a novel approach aimed at automating fetal head biometry using real-time ultrasound feeds, addressing the limitations associated with manual measurements and human error. Our proposed methodology leverages state-of-the-art deep learning models, combining ALEXNET for classification and UNET for segmentation, to detect and delineate fetal headframes within ultrasound videos. These segmented headframes serve as the basis for accurate BPD and HC calculations, enabling precise gestational age estimation. To enhance the reliability of our system, ellipses are drawn on multiple optimally classified headframes, minimizing errors and ensuring consistency in gestational age estimates. The results of our study demonstrate that our automated system achieves gestational age estimations within a clinically acceptable margin of \pm one week when compared to observed gestational age, with an impressive accuracy rate of 96%. A significant advantage of our proposed system is its reduced reliance on the skill level of the sonographer, making it accessible to a broader range of healthcare professionals. This streamlines the ultrasound procedure, reduces interaction time and enhances overall efficiency. In conclusion, our innovative approach to automated fetal head biometry estimation holds the potential to revolutionize clinical pregnancy management. By significantly improving the accuracy and efficiency of fetal growth assessments during pregnancy ultrasounds, our system benefits both expectant mothers and healthcare providers, ultimately contributing to better maternal and fetal health outcomes.

Keywords

Image processing; Machine learning; Fetal age estimation; Head segmentation; Medical imaging



Role of Natural Herbs Saffron and Chamomile in the Management of Depression in Human Subjects-A Clinical Trial

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Presenter

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Current pharmacological treatments are ineffective, cause intolerance and have sedative effects that worsen patients stress. Medicinal plants have been used as a therapeutic option for a variety of ailments. The study aimed to investigate the combined effects of chamomile and saffron herbs as adjuvant therapy in patients with metabolic alterations associated with mild to moderate depression in a prospective, randomized, blinded, end-point pilot study design at the Aga Khan University, Karachi, from August to October 2020, including patients with mild to moderate depression with or without diabetes type II, hypertension, and dyslipidaemia. The eligible participants were randomly allocated into an intervention group A, which was given herbal tea sachets containing saffron (1 mg) and chamomile (20 mg) for twice a day, oral use for a period of one month along with medications and control group B, which was advised to continue their routine medications. The baseline and post-intervention data was collected using Patient Health Questionnaire-9 for assessing depression severity and blood samples were collected for cholesterol estimations. A total of 50 subjects participated in the study divided into two groups. Each group consisted of 25 (50%) participants. Cholesterol and depression values were significantly better in group A as compared to group B ($p < 0.05$). The present study showed that the coadministration of dosages of saffron and chamomile-maintained cholesterol levels within a healthy range in depressive individuals and improve metabolic changes.

Keywords

Depression; Chamomile; Saffron; Hyperlipidaemia; Randomized Clinical Trial



PROCEEDING Emerging Scientist 2024



Determination of Possible Nitrosamine Moieties in Fluoxetine Solid Dosage Form After Stress Conditions

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Presenter

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

The FDA recalled many medicines especially ranitidine, valsartan and metformin due to the presence of nitrosamine moieties in it, as it is declared carcinogenic by WHO. When the chemical structure of them was examined in detail, contains nitrogen as amines, which makes them susceptible for the formation of nitrosamines, along with that all these medicines were also being used for longer time period. As Fluoxetine is also being used for a longer period of time and having secondary amine in its structure, so it will be investigated in detail for stability, by applying stress conditions as laid down by International Conference for Harmonization (ICH). For the determination of nitrosamine and other possible moieties, HPLC, LC-MS and GC-MS a hyphenated technique were used for the presence and quantification of possible degradants especially nitrosamine moieties. Samples of two randomly selected brands and API of Fluoxetine were analyzed by treating them with degrading parameters then analyzed through hyphenated techniques LC-MS and GC-MS. There was no detection of NDMA in stress degraded samples. But number of other degradants were observed and which need to be investigated and be checked on other hyphenated techniques according to regulatory guidelines in order to be on safer side.

Keywords

Fluoxetine; LC-MS; Stress degradation; GC-MS; Nitrosamine moieties



PROCEEDING Emerging Scientist 2024



Fabrication of Ketoconazole Nano Formulation Using Extra Virgin Olive Oil: A Comparative Pharmacokinetic and Stability Studies

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Ketoconazole belongs to Class-II drugs of biopharmaceutical classification system with low solubility and bioavailability issues. The purpose of this research work was to increase solubility as well as bioavailability via nano-emulsion formulation. Nano emulsion was prepared by microemulsion method using olive oil as a lipid, Tween 80 as a surfactant, Polyethylene Glycol (PEG 6000) as a co-surfactant. Based on surfactants and co-surfactants ratio an optimized formulation with particle size of 50.29 nm, polydispersity index of 0.377 and zeta potential -17.2 mv was obtained. The entrapment efficiency (EE%) was 78% while drug loading capacity was 3.97%. The optimized formulation was further characterized by Fourier Transform Infrared (FTIR) Spectroscopy to study drug excipients interaction, scanning electron microscopy further confirmed the size, X-Ray Diffraction (XRD) study showed that drug is changed from crystalline to amorphous form. *In vitro* and *in vivo* studies were conducted, and the nano emulsion showed better bioavailability as compared to marketed drug. *In vivo* antifungal study proved that Ketoconazole nano emulsion has better recovery rate as compared to marketed drug. The t-test was applied, and the significance was 0.0147 $p < (0.05)$. Bioavailability was 66.8%. Similarity index was found as 69.3 for nano emulsion which was greater than marketed drug (59.2). Stability study was conducted at different temperatures and the formulation was found stable at refrigerated, room temperature and (45°C). It is concluded from the current study that nano emulsion of Ketoconazole was better in terms of recovery and release in comparison with marketed drug.

Keywords

Ketoconazole; Olive oil; Bioavailability; *in vitro*; *in vivo*; Stability



PROCEEDING Emerging Scientist 2024



Green Synthesized Nanoparticles as the Novel Approach for Drug Delivery System

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Presenter

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Type

Oral Presentation

Track

Medical & Health Sciences

Location

Room 1

Abstract

A growing trend within nanomedicine has been the fabrication of self-delivering supramolecular nanomedicines containing a high and fixed drug content ensuring eco-friendly conditions. This study reports on green synthesis of silica nanoparticles (Si-NPs) using *Azadirachta indica* leaves extract as an effective chelating agent. The X-ray diffraction analysis and Fourier transform-infra-red spectroscopic examination were studied. Scanning electron microscopy analysis revealed that the average size of particles formed via plant extract as reducing agent without any surfactant is in the range of 100-170 nm while addition of cetyltrimethyl ammonium bromide were more uniform with 200 nm in size. Streptomycin as model drug was successfully loaded to green synthesised Si-NPs, sustain release of the drug from this conjugate unit were examined. Prolong release pattern of the adsorbed drug ensure that Si-NPs have great potential in nano-drug delivery keeping the environment preferably biocompatible, future cytotoxic studies in this connection is helpful in achieving safe mode for nano-drug delivery.

Keywords

Green synthesis; Nanoparticles; Drug delievery



Synthesis of C-3 Modified Novel Amide Analogs of 7-Pyrrolidine Substituted Quinolone: Their Characterization, Antimicrobial, Molecular Docking, MD Simulation and DFT Studies

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Medical & Health
Sciences

Location

Room 1

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Abstract

Extensive and irregular use of antibiotics has resulted in the adaptation of various modes in pathogenic bacteria making them resistant to multiple drugs leading to the failure of the treatment response. In search of a newer, efficient and versatile antimicrobial agent to overcome the antimicrobial drug resistance resulting from the extensive and irregular use of antibiotics, newer compounds were synthesized. For this, fluoroquinolones (FQ) which play a pivotal role in overcoming the havoc created by microbial resistance were selected. Various analogs of the members of this class have been synthesized to overcome this issue. In FQs, position 3 plays an important role in binding to the gyrase complex in a bacterial cell and is assumed essential for antibacterial activity. A series of gemifloxacin (GMFX)-amide analogues were elaborately synthesized, to overcome the adaptation of various modes in pathogenic bacteria making them resistant to multiple drugs and leading to the failure of the treatment response. In search of novel drugs to control this spread and resistance developed in organisms, we focused on the modifications at the C-3 position of gemifloxacin, an important member of fluoroquinolones. Introduction of a variety of amines to form amide analogs (G-D01-G-D07) of gemifloxacin in a quick and facile way, followed by their spectroscopic characterization and structural stability studies by DFT parameters. Microbiological assay evaluates that among these synthesized analogs compounds G-D03, G-D05 and G-D07 are potent antibacterial and antifungal agents against studied species. Further, DFT, Docking, and MD simulation studies explored better insight into the chemical structural stability, inhibitory bacterial mechanism and potency of the most and less active synthesized compounds, using DFT-B3LYP/631g (d, p) Gaussian-09 program, AutoDock Vina and GROMACS, confirming them as potential antibacterial and antifungal agents.

Keywords

Gemifloxacin; Spectroscopic studies; DFT; Microbiological studies; Molecular docking



Patient Centered Self-Management Intervention (PACE-SMI): A Multi-Center Randomized Controlled Trial in Pakistan

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Presenter

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Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

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Abstract

Pakistan, a low-middle-income South Asian nation, holds the highest global prevalence of Type 2 Diabetes Mellitus (T2DM), encumbering individuals, society, and the national economy. Despite acknowledging self-management as the cornerstone, Pakistan faces an implementation gap, stemming from the absence of a working policy and fragmented care that overlooks crucial personal, behavioral, and social determinants, highlighting an urgent need for a patient-centered care (PCC) approach. This study sought to design and test the efficacy of a Patient-Centered Self- Management Intervention (PACE-SMI) in improving glycemic control (HbA1c), self-efficacy and self-care behaviors in T2DM adults in Pakistan. The study comprised of three phases: (1) A meta-analysis of Randomized Control Trials (RCT) of PCC interventions, (2) Development of PACE-SMI based on the results of meta-analysis and extensive fieldwork and (3) Testing of PACE-SMI through a multi-center parallel-arm RCT. The PACE-SMI referred to a comprehensive eight-week multi-component intervention comprising individualized education, counselling, behavioral training and a home visit. Outcome measures were HbA1c, self-efficacy and self-care behaviors assessed at baseline, end of intervention and three months' follow-up. The RCT involved 612 T2DM adults with HbA1c ≥ 7 , randomly allocated to either the Control Group (CG=310) or Intervention Group (IG=302). Intention-to-treat analysis demonstrated a statistically significant reduction in mean HbA1c in the IG (8.49 [SD ± 1.58]) compared to the CG (8.74 [SD ± 1.62]), with a mean difference of 0.25 (95% CI -0.01, 0.51; Cohen's d=0.16; p=0.03) at three months. Significant improvements in self-efficacy and self-care behaviors were also observed in the IG compared to the CG. The meta-analysis affirmed the effectiveness of PCC and outlined the key elements of PACE-SMI. The RCT further supported PACE-SMI' utility, providing a compelling evidence and suggesting its adoption as a standard clinical practice informing healthcare policy in light of huge health and economic burden of T2DM in the country.

Keywords

Behavioral intervention; HbA1c; Randomized controlled trial; Type 2 diabetes



Toxic Effects of Azithromycin and Erythromycin On Liver Enzymes and Other Biochemical Parameters of Male Rabbits

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Presenter

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

Erythromycin is an antibiotic, widely used to treat infections caused by gram-positive bacteria. Azithromycin is also used for the treatment of a number of bacterial infections. The aim of the current investigation was to assess the toxicity of Azithromycin and Erythromycin on the liver enzymes and other biochemical markers in male rabbits. Twenty-seven rabbits were divided into three groups, i.e. Group A, Group B and Group C. Group A was the control group while group B and C were the experimental groups treated with Azithromycin and Erythromycin respectively. Each group contains nine rabbits. Natural feed was given at libitum. Initially rabbits were acclimatized for 14 days. After acclimatization period, the rabbits were exposed to antibiotics. Oral dose of 2 mg kg⁻¹ body weight of Azithromycin and Erythromycin was administered to Group B and C, respectively. At the 21th day of the experiment the blood was collected from the three groups i.e. from the marginal vein of rabbits with the help of 5cc syringe. These antibiotics showed great effects on biochemical parameters. Value of LDL in the control group was 131.44±2.962 while Azithromycin showed a value of 101.11±6.313 and Erythromycin value was 84.33±2.598. Value of HDL in control group was 26.55±2.006 while Azithromycin treated group showed a value of 33.66±3.354 and Erythromycin value was 33.22±3.345. Value of HDL in Control group was 26.55±2.006 while Azithromycin was 33.66±3.354 and Erythromycin value was 33.22±3.345. The value of cholesterol in control group was 115.55±3.282 while Azithromycin was 60.888±6.697 and Erythromycin value is 93.22±2.538. The value of triglycerides in control group was 120.22±4.893 while Azithromycin was 164.77±11.702 and Erythromycin value was 126.44±1.740. The value of albumin in control group was 2.622±0.139 while Azithromycin was 2.277±0.299 and Erythromycin value was 2.87±0.210. The value of sugar random in control group was 88.444±7.090 while Azithromycin was 85.77±3.345 and Erythromycin value is 70.66±3.240. The value of GPT in the control group was 5.66±1.802 while Azithromycin value was 12.22±2.386 and Erythromycin value was 5.88±1.054. The value of ALT in the control group was 105.11±3.016 while Azithromycin was 86.55±3.609 and Erythromycin value was 86.77±2.386. It is concluded from the study that Erythromycin and Azithromycin induced hepatotoxicity as well as affects the liver enzymes and other biochemical parameters.

Keywords

Erythromycin; Azithromycin; Toxicity; Enzymes; Biochemical parameters



Possible Potential of *Moringa stenopetala* (Baker f.) Cufod. for Irritable Bowel Syndrome Therapy

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Presenter

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Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

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Abstract

Moringa stenopetala, a traditionally used remedy for diarrhea and anxiety, was investigated for its effects on the guinea pig ileum to understand its spasmolytic mechanisms relevant to Irritable Bowel Syndrome (IBS). The antidiarrheal activity was assessed through castor oil-induced diarrhea, charcoal meal, and enteropooling assays, while anxiolytic effects were evaluated using elevated plus maze and dark and light activity cages assays. For this purpose, hydroalcoholic extract of *Moringa stenopetala* was tested. The *M. stenopetala* demonstrated protective effects against castor oil-induced diarrhea, by reducing intestinal secretions and motility significantly. The elevated plus maze assay revealed increased entries and time in open arms, resembling the effects of diazepam. In dark and light activity cages *M. stenopetala* pretreatment led to a significant increase in time spent in the light area, with optimal effects at the 150 mg per kg dose. In the isolated guinea-pig ileum, *Moringa stenopetala* exhibited dose-dependent inhibition of histamine and low K⁺-induced contractions, with K⁺ channel opening KCO-like activity mediated by non-specific voltage-gated K⁺ channels. While these findings suggest an antispasmodic effect primarily through histamine receptor antagonism and K⁺ channels activation, the potential for unexplored mechanisms cannot be ruled out.

Keywords

Non communicable diseases; Histamine; Antispasmodic effect; Motility; Antagonism



PROCEEDING Emerging Scientist 2024



Socio-Cultural Barriers and Health Seeking Behaviour Among Female Patients of Tuberculosis in Southern Punjab

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Presenter

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

In Pakistan, some societies consider a woman's place is at her home and they are discouraged to visit the outside home including health facilities. Due to these societal restrictions, many health problems remain undiagnosed and untreated. According to the latest TB trends, the female ratio in smear-positive cases is increasing each year worldwide, which is a serious threat. Hence, we aim to assess the socio-cultural barriers faced by the women and their health seeking behaviour for TB. This cross-sectional descriptive study was carried out in two District Hospitals in Southern Punjab (Muzaffargarh and DG Khan). About 190 females' patients with tuberculosis registered at the TB clinic were selected through simple random sampling. An interview was conducted and the responses were recorded in a structured questionnaire. Data were entered and analysed using SPSS. Out of 190 patients, a majority 161 (85%) of the females claimed that their family and community are reluctant to meet them, 178 (94%) were afraid of leak of information to the community, 112 (59%) were delaying seeking treatment due to stigma, 110 (58%) had health facility conveniently located from their residence, however, 164 (86%) were not satisfied with the traveling costs. Health-seeking behaviour of the female TB patients as well as sociocultural and transport barriers influence the treatment in these patients hence mass education and dedicated health facilities along.

Keywords

Seeking behavior; Tuberculosis; Cultural behavior; Delay service



PROCEEDING Emerging Scientist 2024



DNA Mapping Management in Blood Group with Fourier Transformation Model

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Type

Oral Presentation

Track

Medical & Health
Sciences

Location

Room 1

Abstract

In human DNA monitoring blood groups for our health system controlling is necessary. In this case study we have to monitor four different groups AB+, O+, B+, and A+. The optimal choice of antihypertensive agents remains controversial, and there are only partial answers to working. In this paper, we will propose the true value of the DNA matrix when it finds its average. In human factors, there are important questions in the treatment of hypertension for prevention of management like, what are the appropriate systolic BP with established CAD? or Are the beneficial effects of particular classes of drugs have uniquely protective actions in addition to lowering BP? It is easier for practitioners to extract the information relevant to any particular patient, with or without needing to cross-reference. The characteristic DNA function of the random variable is essentially a Fourier transformation mapping the real random variable into a frequency domain. It is difficult enough to meet DNA properties under normal conditions but whenever pride in workmanship, the professional wants to keep moving and evaluate the patient CCBs four years of study. In a DNA matrix organization has little control over the economic rewards and promotions of the people are 3 types of matrix. Functional matrix, Balanced Matrix, and Project matrix. Many of the problems associated with the matrix are in contradiction with its strengths. Critical values have described the matrix as being costly, nowadays using MATLAB software may show a better hypothesis to find its value. In DNA mapping we take the value of b_n stand for 4 blood groups.

Keywords

CAD; Blood Pressure; DNA; FFT Model



PROCEEDING Emerging Scientist 2024



Unleashing Precision Medicine: Pharmacogenomics in the World of Chemotherapy

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Presenter

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Type

Poster Presentation

Track

Medical & Health
Sciences

Location

Room 5

Abstract

Pharmacogenomics is the study of how an individual's genetic makeup affects the drug responses. In this research, we studied how pharmacogenomics can be used for chemotherapeutic drugs. It will discuss clinically relevant examples of genetic variations that influence the results of any drug therapy (e.g: Cancer therapy). Many patients experience significant adverse effects during drug therapy. The germ line variants and gene expression patterns in different cells results in toxicity and efficacy of drugs in individual patients. Since years combination of chemotherapeutics have been used to combat various cancers. Whole genome sequencing and GWAS are some of the ways used to determine how certain variants in genes affect the responses to anti-cancer drugs. This helped in giving the right dosage, right kind of drug to the individual patient, curbing the inter-individual differences and adverse reactions in patients. This study is the combination of literature survey and a questionnaire-based understanding of pharmacogenomics in drug therapy. In this connection, we are aiming to conduct KAP (Knowledge, Attitude, Practices) study using 10 item questionnaires distributed among students and professionals ascertaining their knowledge, attitudes and practices regarding pharmacogenomics in Pakistan. Questionnaire includes the understanding & need for personalized medicine, how it should be incorporated in Pakistan to increase the efficacy of pharmacotherapy by decreasing side effects. What may be the expected limitations and challenges to adopt it. As we know that Pharmacogenomics is being currently used in countries like USA, Canada, UK and according to statistics individualized therapy has been proven beneficial for the patient's health in long term. In this study, about 500 validated and self-administered questionnaires were distributed amongst; (i) 4th & 5th year students of MBBS, BDS & Pharm D and (ii) health care professionals (HCPs) to have KAP about the use of pharmacogenomics in patient's drug regime. Data collection is still in progress but will be exhibited on poster during the event.

Keywords

Pharmacogenomics; Whole genome sequencing; Chemotherapy; Gene expressions; Precision medicine



PROCEEDING Emerging Scientist 2024



Deep Learning-Based Fundus Image Analysis for Automated Diabetic Retinopathy Staging

Anoosha Tahir and Ali Mehmood Shiekh

Buch International Hospital, Multan, Pakistan

Presenter

Anoosha Tahir
Buch International
Hospital, Multan

Type

Poster Presentation

Track

Medical & Health
Sciences

Location

Room 5

Abstract

One of the main causes of visual loss in the world is diabetic retinopathy (DR), a microvascular complication of diabetes. To avoid irreversible vision loss, early diagnosis and screening are essential. However, accessibility, expense, and subjective interpretation are frequent issues with traditional screening techniques. Our work suggests a novel deep-learning method for fundus image-based automatic classification of DR stages, to enhance patient management and early detection. We used an extensive dataset of fundus images labeled for non-proliferative, proliferative, and severe DR stages. Accurate stage classification was achieved through the training and optimization of deep Convolutional Neural Networks (CNNs). Standard metrics like accuracy, sensitivity, specificity, and AUC were used in performance evaluation. A more thorough examination of the trained model's generalizability and potential for clinical application was conducted. As a result, we created a deep learning model for DR stage classification that is both reliable and accurate, which may help ophthalmologists diagnose patients earlier and provide better care. To lessen the burden of DR and the vision loss it causes, this research helps to develop automated and easily accessible screening tools.

Keywords

Deep Learning; Ocular Images; Systemic Diseases; Diabetic Retinopathy



PROCEEDING Emerging Scientist 2024



IoMT Meets Machine Learning: From Edge to Cloud Chronic Diseases Diagnosis System

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Presenter

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Type

Poster Presentation

Track

Medical & Health
Sciences

Location

Room 5

Abstract

In conventional healthcare, real-time monitoring of patient records and information mining for timely diagnosis of chronic diseases under certain health conditions is a crucial process. Chronic diseases, if not diagnosed in time, may result in patients' death. In modern medical and healthcare systems, Internet of Things (IoT) driven ecosystems use autonomous sensors to sense and track patients' medical conditions and suggest appropriate actions. There is a need for a comprehensive and efficient approach to early detection and monitoring of chronic diseases, focusing on a diverse set of ailments: COVID-19, pneumonia, diabetes, heart disease, brain tumor and Alzheimer's. The proposed solution introduces a novel hybrid approach, leveraging the power of both internet of things and machine learning (ML). This synergy aims to enhance the accuracy and efficiency of disease detection by considering multiple perspectives. The integration of autonomous sensors within the IoT framework enables continuous and real-time monitoring of patients, providing a wealth of data that serves as the input for the ML models. These ML models, trained on extensive datasets encompassing various health conditions, contribute to the early identification of symptoms and patterns associated with the targeted chronic diseases. A critical aspect of this research involves the evaluation and comparison of multiple ML models to ascertain their performance in terms of accuracy, precision, recall, F1 score and area under the curve (AUC). By employing a diverse set of metrics, the study aims to provide a comprehensive assessment of the proposed hybrid approach's effectiveness across different chronic diseases. The outcomes will contribute valuable insights into the strengths and limitations of various ML models, aiding healthcare professionals in selecting the most suitable algorithms for specific diagnostic purposes. To validate this approach, experiments are conducted in a cloud-based environment using both benchmark and real-world datasets. The inclusion of real-world data ensures the applicability and robustness of the system in practical healthcare scenarios. Statistical analyses, including ANOVA tests, are employed to assess the significance of differences in accuracy results among various classifiers. This rigorous validation process enhances the reliability and generalizability of the proposed solution. The presented IoT and ML based hybrid approach offers a promising avenue for early detection and monitoring of chronic diseases, addressing the critical need for timely intervention. The comprehensive evaluation and validation of this approach underscore its potential impact on improving healthcare outcomes, providing a valuable tool for healthcare practitioners in their ongoing efforts to enhance patient care and mitigate the adverse effects of chronic diseases.

Keywords

IoMT; Machine Learning; Diseases Diagnosis System



Investigation of Antibiotic Resistance and Biofilm Formation Ability of *Acinetobacter baumannii* Isolated from Urinary Catheters

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Presenter

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Poster Presentation

Track

Medical & Health
Sciences

Location

Room 5

Abstract

Gram-negative bacillus *Acinetobacter baumannii* is an opportunistic pathogen that can infect the blood, urinary tract, and lungs (pneumonia). The growth of biofilm along the catheter surface in hospitalized patients is a major contributing factor to *A. baumannii* multiple-drug resistance and its participation in uropathogenesis. Due to the emergence of antibiotic resistance and virulence factors, current study attempts to track the incidence of *A. baumannii* in medical institutions. The goal of the study was to clarify how the development of biofilms and antibiotic resistance interact to increase the pathogenicity of *A. baumannii* infections. For this investigation, Allied Hospital Faisalabad provided a total of 50 urine catheterized samples from various wards. Urinary catheter-derived *A. baumannii* isolates were gathered and analyzed for the study. For more identification, biochemical characterization was done. According to the standards of the Clinical and Laboratory Standards Institute (CLSI), antibiotic susceptibility testing was done using the Kirby-Bauer disc diffusion method to evaluate the resistance profiles of the isolates. Additionally, recognized techniques such as crystal violet staining was used to evaluate the isolates capacity to produce biofilms. The prevalence of *A. baumannii* was found average in isolated samples but the prevalence of being a multi-drug resistance (MDR) was high. The clinical distribution was observed to analyze the spread rate of infection of *A. baumannii*. The observed rate of biofilm formation was also found higher. The results found that biofilm formation exhibit strong correlation with carbapenem-resistant isolates. The study aimed to elucidate the interplay between antibiotic resistance and biofilm formation, two key factors contributing to the pathogenicity of *A. baumannii* infections.

Keywords

MDR; CLSI; Biofilm; AMR; Crystal violet staining



Synergistic effects of Apigenin and Safranal on Oxidative and Neurological Deficits in Alzheimer Disease Rats

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Presenter

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Type

Poster Presentation

Track

Medical & Health
Sciences

Location

Room 5

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Abstract

Alzheimer's disease (AD) is a prevalent neurodegenerative condition that is characterized by a reduction in cognitive ability as well as disrupted neural connections. Damage caused by oxidative stress as well as neuroinflammation are two of the most important contributors to the onset of Alzheimer's disease (AD). Natural compounds possessing anti-inflammatory and antioxidant characteristics have emerged as potential therapy possibilities. The objective of the present study was to investigate the potential synergistic effects of Apigenin and Safranal on oxidative damage and neurological dysfunction in rats modelled with Alzheimer's disease (AD). In this study, 36 albino Wistar rats were divided into six groups; the healthy control group received intraperitoneal injection of normal saline, while the disease control group was intraperitoneally injected with scopolamine (2.5 mg kg⁻¹). Donepezil group, Apigenin group, Safranal group and API+SAF group also received intraperitoneal injection of scopolamine (2.5 mg kg⁻¹), followed by oral administration of donepezil (1.5 mg kg⁻¹), Apigenin (50 mg kg⁻¹) and Safranal (0.2 mL kg⁻¹) and API+SAF (Safranal (0.2 mL kg⁻¹) and Apigenin (50 mg kg⁻¹)) respectively. The treatment lasted 4 weeks, after which cognitive function and behavioural changes were assessed. After analysis, rats were euthanized and specific brain regions collected for neurochemical assessment. Various biomarkers related to oxidative stress and brain function were measured, such as MDA, SOD, catalase, GPx, GSH, total protein content and acetylcholine levels. The results showed that the combination of Apigenin and Safranal exerted a significant neuroprotective effect compared with the disease control group and the treatment group alone i.e., Apigenin and Safranal. Furthermore, the synergistic group showed a reduction in oxidative stress, as indicated by decreased MDA levels and increased SOD, catalase, GPx and GSH activities. These findings suggest that the combined treatment of Safranal and Apigenin, at the given doses, has synergistic effects in improving cognitive deficits, reducing oxidative stress, and alleviating anxiety in the Scopolamine-induced rat model of Alzheimer's disease. These natural compounds hold potential as therapeutic agents for Alzheimer's disease and warrant further investigation to understand their underlying mechanism of action.

Keywords

Alzheimer's disease; Oxidative stress; Antioxidant; Natural compounds



A Multifunctional Polymeric Micelle for Targeted Delivery of Paclitaxel by the Inhibition of the P-Glycoprotein Transporters

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Poster Presentation

Track

Medical & Health
Sciences

Location

Room 5

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Abstract

Multidrug resistance caused by P-glycoprotein (P-gP) efflux is a major reason for chemotherapy failure in oncology. The study aims to enhance the *in vivo* efficacy of poorly soluble paclitaxel (PTX) against solid tumors by employing innovative amphiphilic mucopermeating functional micelles for targeted delivery. Papain (Pap) grafted thiolated hyaluronic acid-pluronic F127-lithocholic acid triblock (Pap-THA-g-F127-SS-LCA) was synthesized and characterized to yield Pap functionalized thiolated redox micelles (PT-R-Ms), known as multifunctional polymeric micelles. Mucoadhesion, permeation enhancement, oral pharmacokinetics, biodistribution, and toxicological studies were carried out to fully elucidate the therapeutic outcomes of the polymeric micelles. *Ex vivo* permeation indicated a 7.89-fold enhancement in the permeation of PTX with mucopermeating PT-R-Ms compared to the pure PTX. Expulsion of most anticancers from enterocytes was due to P-gp transporters. PT-R-Ms inhibited P-gP transporters, PTX accumulated at target site and improved its efficacy as well as bioavailability at the target site. Intracellular accumulation could also increase by the inhibition of P-gp. Moreover, PT-R-Ms induced higher apoptotic cell percentage ($42.9 \pm 0.07\%$) than pure PTX, with over 80% viability in human macrophages, demonstrating biocompatibility. Biodistribution studies revealed that fluorotagged PT-RMs accumulated in excised tumors and organs. The higher fluorescence intensity indicated the mucopermeation of micelles across the intestine. The orally administered PT-R-Ms efficiently overcome intestinal barriers and inhibit the P-gP efflux pump, resulting in increased bioavailability of PTX (up to 8-fold) in comparison to pure PTX. Thus, Utilizing mucopermeating PT-R-Ms presents a promising strategy to enhance anti-tumor efficacy and minimize toxic effects in cancer therapy by overcoming permeation barriers.

Keywords

P-gP efflux; Biodistribution; Mucoadhesion; Resistance; Fluorescent micelles

02 Conference Track

• Agricultural & Biological Sciences

Session Chairs:



Prof. Dr. Farkhanda Manzoor

Dean Scientific Research and Development
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Prof. Dr. Kashif Ali

Dean Faculty of Life Sciences, Shaheed Zulfikar Ali Bhutto
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— EMERGING SCIENTIST —



Toxicological Effects of Short Term Exposure to Alpha-Cypermethrin on Adult Albino Mice *Mus musculus*

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Presenter

Farkhanda Manzoor
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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Pesticides have many agricultural, industrial and public health benefits; however, their toxicities in both humans and animals have always been a concern. In recent times pesticide usage has dramatically increased in developing nations. Synthetic pesticides have become an integral component of various pest eradication programs for modern farming and control of various vector borne diseases as well as in door pests. Pyrethroids are synthetic pesticides derived from natural pyrethrins extracts of the plant *Chrysanthemum cinerariaefolium* which comprises esters of chrysanthemum acid along with halogenated derivatives of acids and alcohols. According to WHO classification pyrethroids belong to the fourth group of insecticides that include 42 substances. Pyrethrins are derivatives of pyrethroids which are extracted from dried flower heads of *Chrysanthemum cinerariaefolium*. Permethrin compounds are commonly used as insecticides and are documented to have harmful effects on the immune system, fertility, cardiovascular system and on hepatic processes. In present study, the toxicological effects of α -cypermethrin were observed on adult albino mice.

The LD50 was determined to be 169.9 mg kg⁻¹. Mice were exposed to 1/2 LD50 α -cypermethrin fumes via nebulizer for 30 minutes twice a day, daily for a total period of 32 days. Mice exhibited physical and behavioral symptoms characteristic of toxicity, such as salivation, nasal discharge, urination and increased incoordination. Despite the 100% survival rate of mice at the end of the study period, the histological examination of liver, kidneys, trachea, lungs and genitalia revealed extensive damage. These damages included hepatic necrosis, hemorrhaging of the renal tubules, shrunken glomeruli, pulmonary fibrosis and testicular degeneration. There was a significant increase in leukocytes and platelets of the treated mice. It is thus concluded that exposure to α -cypermethrin even for a short regular period has devastating effects on histological and immunological parameters.

Keywords

Permethrin; Alpha-Cypermethrin; Insecticides; Human Health; Histopathology; Toxicology



PROCEEDING

Emerging Scientist 2024



NMR-based Metabolic Fingerprinting of Grapevine Cultivars

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Presenter

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Karachi

Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Metabolic fingerprinting is a tool to perform metabolic comparison of different samples. This technique is widely applied to highlight metabolic differences at different stages of development, disease of healthy state, or taxonomical differences, etc. This tool is now widely applied to the agriculture to achieve various goals, including quality control, disease and pest management and assistance to breeding or genetic modification programs. Chemical characterization of economically important crops, i.e., chemotaxonomy, is one of the major objectives accomplished by the metabolic fingerprinting studies. Not only different types, samples and crops are studied, analytical platforms used for such studies also varied considerably. Liquid and gas chromatography coupled with mass spectrometry and Nuclear Magnetic Resonance (NMR) spectroscopy is the most widely used among the others. Choosing the analytical platform is mainly depends upon the aim of the study, target metabolites, and the availability. Nuclear magnetic resonance, although less sensitive as compare to mass spectrometry-based techniques, is an optimum choice offering discrete advantages of simple sample preparation, shorter measurement time and the use of spectroscopic data for quantification without any calibration curve. Current study used NMR in combination with various multivariate data analysis methods, including principal component analysis (PCA), Partial Least Square Discriminant Analysis (PLS-DA), hierarchical clustering analysis (HCA), to perform chemical classification or chemotaxonomy of resistant and susceptible grapevine cultivars. Total twelve cultivars were subjected to metabolic fingerprinting, out of which eight are resistant and four are susceptible. The differentiating metabolites are identified as phenylpropanoids and flavonoids, whose concentrations are higher in the resistant cultivars as compared to susceptible cultivars. The overlapping of NMR resonances of different metabolites is the major problem for compound identification which is usually overcome by the use of different 2D techniques. In this study, 1 H- 1 H correlated spectroscopy (COSY) and Heteronuclear Multiple Bonds Correlation (HMBC) spectra were recorded to identify the metabolites.

Keywords

NMR; Grapevine; Metabolic fingerprint; Chemotaxonomy; Pest management



PROCEEDING Emerging Scientist 2024



Phytocompound-Based Drug Discovery Approach to Explore the Frostbite Healing Potential of Abietadiene Isolated from *Pinus roxburghii*

Asma Ahmed¹, Hasan Akbar Khan¹, Anam Naz¹, Rehana Badar^{1,3} and Noman Khalique²

Presenter

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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Exposure to sub-zero temperatures usually leads to vascular damage causing severe ischemic injury known as frostbite, one of the prominent cold weather injuries that can lead to devastating consequences such as amputation of the extremities. Although rate of amputation due to frostbite has decreased recently due to thrombolytic therapy but this new regimen comes with a price as well which include symptoms such as profuse gastrointestinal bleeding in patients. Thus, there is a need to discover effective treatments with least side effects and more bioavailability rate. In current work, aqueous extract of *Pinus roxburghii* leaves were checked against dry-ice induced frostbite on plantar surfaces of albino Wistar rats (both genders, 150-200 g) by keeping heparin as control, followed by the computational evaluation of its phytochemicals to prioritize potential anti-inflammatory and anti-thrombotic compounds against frostbite. Statistically analyzed results of molecular docking showed that among all secondary metabolites of *P. roxburghii*, abietadiene was most suitable potential ligand against antiplasmin and antithrombin III, which modulated anticoagulant pathway and proved to be a valuable anti-inflammatory and antithrombotic agent for wound healing. These results suggest the wound healing potential of abietadiene especially in case of frost bite which further needs to be validated experimentally.

Keywords

Pinus roxburghii; Abietadiene; Antiplasmin and antithrombin III; Wound healing



PROCEEDING Emerging Scientist 2024



Developing Nutraceuticals for Better Health

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Presenter

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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Nutraceuticals are naturally derived bioactive compounds that are found in foods, dietary supplements, and herbal products, having health-promoting and medicinal properties. These products have the advantage over medicines due to the lack of side effects. The most rapidly growing segments of this industry are dietary supplements and natural/herbal products. The global nutraceutical market is estimated at USD 117 billion. At the global level, FDA regulates these products. Whereas, in several countries local regulatory authorities have control over these products. They are classified on the basis of their natural source, chemical grouping, nutrients, herbals, dietary supplements and dietary fibre. Research data revealed their implication against several diseases, such as cancer, neurodegenerative diseases, cardiovascular diseases and others. The nutraceutical revolution will lead us into a new era of medicine and health, in which the food industry will become research-oriented. Internationally, significant limitations to growth in this area are resulting from a necessity to properly label and assess the health effects of nutraceutical and functional foods. Food safety, quality and a better understanding of interactions among foods, medicines and dietary supplements are pivotal requirements for the development of nutraceutical products. This presentation will increase our understanding of the prospects of nutraceuticals in international scenario.

Keywords

Nutraceuticals; Market; Dietary fibre; Product development



PROCEEDING Emerging Scientist 2024



Effect of Biochar on Growth of *Panicum antidotale* and Soil Fertility in Rangelands

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Presenter

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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Our Rangelands contain variety of grass species from which Blue panic (*Panicum antidotale* Retz.) grass has potential to resist stress and can produce forage at large scale. Biochar is well known for its ability to increase crop production, soil fertility, carbon sequestration and climate change mitigation. This study was conducted in the field area of Rangeland Research Institute, National Agriculture Research Center, Islamabad. Biochar was produced in biochar kiln at 450°C temperature with residence time of 3 hrs at slow pyrolysis system. Corn Stover was used as source of biochar production. The pot experiment was conducted in 8 weeks with one control treatment (only with soil) and four biochar treatments (Soil+Biochar) 100, 125, 150 and 200 g. Ten seeds were sown into each pot and germination of seeds and height data was recorded on weekly basis. As 100% germination observed in biochar treatment of 150 and 200 g. Height in control treatment was 9 inches and in 200 g treatment it was 18 inches which indicated that biochar has the potential to double the forage production while height of plant in 100, 125 and 150 g were 13, 14 and 16 inches consequently. Biochar properties has been analyzed according to standard methods which were pH 9.78, EC 5.69 dS m⁻¹, N 10%, OC 30% and CEC 119 cmolc kg⁻¹. Soil properties before experiment were sand 70, silt 26 and clay content 4%, EC 0.27 dS m⁻¹, pH 7.91, NO₃-N 15%, P 6.5 ppm, K 144% and organic matter 0.95%. After incorporating biochar an increase in pH and EC. Soil fertility by increase in N, P and K was found. That proved that soil properties can be enhanced after biochar addition were sand 70, silt 28 and clay content 2%, EC 0.37 dS m⁻¹, pH 8.3, NO₃-N 18%, P 8.9 ppm, K 160% and organic matter 1.2%. This concluded that the application of biochar clearly express multiple benefits in the growth of blue panic (*Panicum antidotale*) that can be used as best climate change resistant fodder for livestock and improving soil fertility in rangelands.

Keywords

Rangeland management; Biochar; *Panicum antidotale*; Corn-Stover biochar



PROCEEDING Emerging Scientist 2024



Banana Cigar End Rot Disease in Sindh, Pakistan

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Presenter

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Jamshoro

Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Musicillium theobromae is the causal agent of the Banana Cigar End Rot Disease (BCERD), which is responsible for causing significant damage to banana crops. The BCERD has become a growing concern among banana growers in Pakistan over the past five years. However, it has also been reported in the Sub-continent, including India and Pakistan. In the present scenario, BCERD is an emerging threat to banana production world-wide, present study assessed the disease intensity (DI) in 10 major cropping districts of Sindh Province. During the randomized survey, the disease intensity (DI) of Banana Cigar End Rot Disease (BCERD) was 14.87% (DI) across the 10 major cropping districts of Sindh throughout the year 2021. The BCERD was prevailing in all districts of Sindh. A significant prevalence of the disease was found in Sindh. The DI varied among the sampling areas, with higher average DI observed in Thatta (xDI = 18.9%), Tando Allahyar (17.3%), Badin (16%), Matiari (16%), and relatively lower DI observed in Naushahro feroze (12.1%), Ghotki (12.7%), Sukkur (13%), Khairpur (13.8%), SBA (14.6%) and Sanghar (15.1%). Additionally, seasonal variations were observed throughout the months of 2021, the higher DI recorded in warm and moist months. The DI was higher in August (xDI = 27.4%), September (25.7%), July (22.5%), October (21.5%) and June (18.6%). Conversely, it declined during relatively cool or hot and dry months, reaching very low values in February (2.9%), January (3.4%) and December (6.2%) and slightly increasing in March (8.9%), November (12.6%), April (12.6%) and May (15.8%). The DI exhibited a higher occurrence in the warm and humid seasons across Sindh, showing a direct correlation with humidity, temperature and other environmental factors. The data analysis indicated that agro-climatic or environmental factors had a significant impact on DI. The study underscores the significant presence of the disease and infers the incremental trend in the disease and could be whistle blow for BCERD epidemic in the whole cropping area of Sindh.

Keywords

Musicillium theobromae; Banana crop in Sindh; BCERD; Humidity



PROCEEDING Emerging Scientist 2024



Investigation of N-acyl Homoserine Lactone-Based Quorum-Sensing System and Algininate Lyase Activity in Marine Bacterial Species of *Grimontia marina* AS01 and *Alteromonas macleodii* AS02

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Presenter

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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Production, detection and reaction to external signaling molecules are essential steps in quorum sensing (QS) process. Through the use of QS, bacterial communities may synchronize their responses to shifts in the density and diversity of their vicinal neighbors. The QS also play an important role in regulating enzymatic activities among marine bacteria. The aim of the present study was to detect and identify N-acyl homoserine lactones (AHLs) based QS signaling molecules and the possible influence on algininate lyase in marine bacterial isolates of *Grimontia marina* AS01 and *Alteromonas macleodi* AS02. Marine water samples were collected from Arabian Sea, Karachi Pakistan, following the standard collection methods. Bacterial strains were isolated and pure cultured using Zobell 2216 marine medium. Molecular identification was achieved based on 16S rRNA gene analysis. Screening for AHLs was achieved using *Agrobacterium tumefaciens* A136 as a biosensor. Based on 16S rRNA analysis, the bacterial strains were identified as *Grimontia marina* strain AS01 (OP143768) and *Alteromonas macleodii* strain AS02 (OP143769). Cross-feeding bioassay revealed the positive reactions for the production of AHLs. Reversed phase-TLC analysis showed the identification of C6-HSL produced by *G. marina* AS01 and 3OXO-C6-HSL by *A. macleodii* AS02 strain. Moreover, QS inhibitor AiiA protein reduced the production of algininate lyase in *A. macleodi* AS02, while no effect was observed in *G. marina* AS01. These results substantiate the involvement of QS system in regulating algininate lyase activity in *A. macleodii* AS02. The QS in marine bacteria may involve in hydrolysis of complex organic matter in marine environment.

Keywords

Arabian sea; Acyl homoserine lactone; Bioassay; Reporter strain; Quorum-sensing



PROCEEDING Emerging Scientist 2024



Impact of Biocontrol Agents on Growth Parameters, Physicochemical and Biochemical Properties of Tomato (*Lycopersicum Esculentum*)

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Type

Oral Presentation

Track

Agricultural & Biological Sciences

Location

Room 2

Abstract

The present study aimed to assess the efficacy of biological control agents, specifically epiphytic yeast and fluorescent *Pseudomonas*, in controlling phytopathogenic fungi infections in tomato plants. The *in vitro* tests demonstrated that the epiphytic yeast and fluorescent *Pseudomonas* effectively inhibited the growth of *Fusarium solani* and *Drechslera*, obtained from diseased tomatoes. Based on the *in vitro* results, selected isolates were further utilized for experiments under screen house conditions. The selected isolates of epiphytic yeast and fluorescent *Pseudomonas* (YFSL45, PFSL-9, PFSL-32, YFSL-3+PFSL-2, YFSL45+PFSL-9) yielded positive outcomes. The treated tomato plants exhibited significant improvements in shoot weight, shoot length, root weight and root length compared to the control group. Moreover, the treated plants and fruits exhibited higher concentrations of chlorophyll, carbohydrates, phosphorus, salicylic acid, total phenolic content and antioxidant activity compared to the untreated plants. The levels of defense-related enzymes, such as β -1-3-glucanase and chitinase, were higher in the treated plants and fruits compared to the control group. Similarly, the concentration of antioxidant enzymes (SOD, POD and APX) were also higher in the fruit of the biocontrol-treated plants. Overall, the study demonstrated that the application of epiphytic yeast and fluorescent *Pseudomonas* effectively improved plant growth parameters and reduced losses in tomato plants and fruits. These findings suggest that these biocontrol agents have the potential to be used as a sustainable and environmentally friendly method for managing losses in tomato crops.

Keywords

Biocontrol; *Fusarium solani*; Physicochemical; Biochemical; *Lycopersicon esculentum*



PROCEEDING Emerging Scientist 2024



Molecular Assessment of Antibigram and Virulence Profile of Soil Borne Enterococci

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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Enterococci, the Gram-positive, catalase negative, non-spore forming, and aerotolerant fermentative organisms form the second largest group of bacteria studied with reference to microbial source tracking. Despite being a member of normal human intestinal flora, they are not regarded any more as GRAS (Generally Recognized as Safe) organisms and some of its species may turned out to be a major cause of nosocomial infections. Thus objective of the current study is to assess the prevalence, dissemination, and antibiotic resistance associated with enterococci from bulk soil (BS) samples (n = 500) of Karachi. Enterococci were recovered from soil samples using enrichment procedure and identified phenotypically by Gram staining and catalase test. Furthermore, identification to species level was done using mPCR. Resistance against vancomycin, gentamicin, chloramphenicol, tetracycline, ampicillin, erythromycin, bacitracin and neomycin was screened by agar micro dilution method and further complimented by mPCR of corresponding resistance genes including aac6-aph2, aph(3)-IIIa, ant(4)Ia, aac(3)-IV, ermB, TetM/L/S, Tn916-1546, pbp-5, gyrA, parC. The BOX, ERIC and RAPD PCR were used to determine genetic relatedness among different species. Total 372 enterococcal isolates were recovered from bulk soil samples with *Enterococcus faecium* being the major specie followed by *Enterococcus faecalis*. Varying degree of resistance against major antibiotics was screened with meropenem being the most ineffective and chloramphenicol being the most effective antibiotic. Majority of the isolates were multidrug resistant carrying at least 3 resistance genes. As Rep-PCR results showed great heterogeneity among the tested isolates. Presence of multiple antibiotic resistant enterococci in bulk soil represents a potential source for further dissemination to human and animals and a possible causative agent of life-threatening infections which results in prolong hospital stay and decreased susceptibility to major antibiotics use in our society.

Keywords

Enterococci; Antibiotic resistance; Virulence determinants; Soil



PROCEEDING Emerging Scientist 2024



Occurrence of *Staphylococcus aureus* in Nasal and Wound, Antibiotic Resistance and Pathogenicity in Indoor Patients Faisalabad, Pakistan

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Presenter

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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Staphylococcus is a genus of gram-positive bacteria. *Staphylococcus aureus* (*S. aureus*) is the normal flora of the human throat, nasopharynx and gastrointestinal tract. As *Staphylococcus aureus* causes meningitis, bloodstream infections, osteomyelitis and heart problems and it is the major reason for wound contamination. The purpose of this study was to evaluate the occurrence of *S. aureus* in nasal and wound sites of the patients, its Antimicrobial Resistance (AMR) profile and its pathogenicity potential (biofilm, hemolysis and staphyloxanthin). This study was carried out at the Institute of Microbiology (IOM), University of Agriculture Faisalabad, Pakistan. For this study, the nasal and wound samples of patients were taken with the help of sterile cotton swabs. The *S. aureus* was isolated using mannitol salt agar (MSA). Grams staining and biochemical assays (catalase, coagulase, mannitol fermentation, indole, methyl red, Voges-Proskauer and citrate utilization test) were used to further characterize the bacteria. In accordance with Clinical Laboratory and Standard Institute (CLSI) recommendations, the Kirby-Bauer disc diffusion technique was used to evaluate the antibiotic susceptibility profile. The bacterial suspension was spread on Muller-Hinton agar plates, followed by antibiotic discs. Zones of inhibition were observed after incubation. The tissue culture plate technique was used to find out the biofilm formation ability of *S. aureus*. Sheep blood agar was used to check the hemolysis pattern of isolated *S. aureus*. Further, the staphyloxanthin content was evaluated. The isolated *S. aureus* from the human nasal route and skin wound was highly resistance to three or more (multidrug-resistant) currently used antibiotics. The isolated *S. aureus* was highly virulent because it exhibited different degrees of biofilm, hemolysis, and staphyloxanthin synthesis. *Staphylococcus aureus* isolated from a human nose and wound showed a considerable burden of AMR and pathogenicity, presenting an imminent threat to the populations health.

Keywords

S. aureus; AMR; MDR; CLSI; Pathogenicity



PROCEEDING Emerging Scientist 2024



Green Synthesis of Metal Nanoparticles for Potential Biological and Agricultural Applications

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Presenter

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Type

Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

The green synthesis of metal nanoparticles (NPs) has garnered significant attention due to its eco-friendly and sustainable approach to nanoparticle production. This process utilizes natural sources such as plant extracts, microorganisms, and biocompatible reducing agents, minimizing the use of hazardous chemicals. This research explored the applications of silver nanoparticles as antioxidant, antibacterial and antifungal agent to find their significance in treatment of diseases and prevention of fungal attacks on plants. Silver nanoparticles were synthesized using the extract of *Viola odorata* plant. The synthesized nanoparticles were spherical in shape with an average size of 18 nm. The nanoparticles have shown potential effect as an antioxidant, antibacterial and antifungal agents. In conclusion, the green synthesis of metal nanoparticles holds great promise for various biological and agricultural applications. The eco-friendly nature of this approach, coupled with the unique properties of the resulting nanoparticles, positions them as valuable tools for addressing contemporary challenges in healthcare and agriculture while minimizing the impact on the environment. Further research and development in this field will undoubtedly uncover new opportunities and expand the horizons of green-synthesized metal nanoparticles in these critical domains.

Keywords

Nanopartilces; Green synthesis; Agriculture; Nanoparticles



PROCEEDING Emerging Scientist 2024



Silver Nanoparticles: A Potential Anti-Contaminant Source in Plant Tissue Culture Medium

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Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

Silver nanoparticles have been shown to exhibit potent anti-contaminant activity by various researches. Lab contamination has been reduced by using silver nanoparticles treatment on *Cestrum nocturnum* tissue culture medium. The effective concentrations of AgNPs treatment to avoid lab contamination with no effect on growth parameters in plant have been established in this study. The AgNPs treated tissue cultured and control plants were compared with respect to biochemical analysis and physical parameters. The tissue cultured plants morphology in control and experimental has been studied and compared through Scanning Electron Microscopy and Fluorescent Microscope. *Cestrum nocturnum* tissue culture plants of both control and treated have been clearly examined in their cells, tissues and xylem bundles. The impact of treatment of AgNPs was analysed by comparing the expression of the SAND and PP2A housekeeping genes in treated plants and control plants. There is no reported and published studies have been identified yet to check the stress of AgNPs treated plants on housekeeping genes. It was observed from the experiment that housekeeping gene expression was almost the same in both control and treated plants. Average concentration of the AgNPs such as 2, 3 and 5 ppm has been found suitable to control the fungal and bacterial contamination. Better growth has been observed with the 5 ppm concentration of AgNPs in *Cestrum nocturnum* medium with no effect on chlorophyll content and growth parameters.

Keywords

Cestrum nocturnum; Anti-bacterial; Anti-fungal; AgNPs; Night queen; *in vitro*



PROCEEDING Emerging Scientist 2024



Assessing Heavy Metal Contamination in Soil and Staple Food Samples across the Jhelum River Basin: A Comprehensive Study

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Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

In Pakistan, the proliferation of heavy metal contamination in soil, staple foods and water has emerged as a pressing environmental concern. This study focuses on assessing the extent of heavy metal contamination in soil and staple food crops, including wheat, maize and rice, within the Ajk Region of the Jhelum River Basin, Pakistan. Samples from both soil and staple foods were collected and analyzed for the presence of nickel (Ni), lead (Pb), zinc (Zn), chromium (Cr) and cadmium (Cd) using the Thermo Scientific Atomic Absorption Spectrometer method. The results were compared with the guidelines set by the World Health Organization and the Food and Agriculture Organization (WHO/FAO) for acceptable levels of heavy metals in soil and crops. The findings unequivocally reveal significant contamination of both soil and staple foods with the examined heavy metals. Notably, cadmium concentrations ranged from 2.008 mg kg⁻¹ to 0.999 mg kg⁻¹ in soil samples and from 0.1599 to 0.8587 mg kg⁻¹ in staple foods. Given that these metals are absorbed by plants and subsequently accumulate in the crops that constitute a major part of human and animal diets, their increased presence in the environment poses substantial health risks. Multiple sources contribute to the introduction of hazardous metals, including natural processes releasing them into food, air and water, as well as anthropogenic activities such as pesticide and herbicide usage, wastewater irrigation and fertilizer application in agriculture. Correlation analysis suggests a common source or origin of heavy metals in both staple foods and soil within the research area. This evidence underscores the potential health hazards associated with the consumption of crops grown in this region. Therefore, residents in areas characterized by elevated levels of heavy metal pollution should exercise caution when consuming these foods, as they have been linked to adverse health effects. Monitoring and regulating the presence of these harmful substances in food crops are imperative steps to mitigate these risks.

Keywords

Heavy metal contamination Soil and staple food analysis; Environmental pollution; Health risks; Jhelum River Basin; Pakistan



PROCEEDING Emerging Scientist 2024



Climate Change and Land Use Change Induce Agriculture Expansion in Mountains of Pakistan and their Effect on Ecosystem Services

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Oral Presentation

Track

Agricultural &
Biological Sciences

Location

Room 2

Abstract

The Hindu Kush, Himalaya and Karakorum (HHK) Mountains ranges in Pakistan covers about 23% area of the country, contains 67% of total forests and 80-90% water resources. These ranges also act as potential biodiversity and tourism hotspot, acts as an important carbon sink as well provides other ecosystem services. The overall worth of the different ecosystem services is estimated to be 86 to 100 \$ billion. Under different climate and land use change scenarios, it is expected that agriculture land will increased up to 1.5 million hectare by 2100. If all the AL is occupied, it will effect 0.44 million hectare of forest, 0.13 million hectare of protected areas, 90 million m³ growing stock will be reduced, would release about 63 million tons of carbon and will also reduce 15-20% of NTFPs production. This will also increase water discharge by 50-80% initially, but a drastic decrees of 90% in discharge is expected. Overall, loss of about 20 to 30 billion is expected in different ecosystem services. Therefore, counter approaches are required to achieve dual goal of food security and maintain ecosystem services in these regions.

Keywords

High lands; Agriculture expansion; Food security ecosystem services



Isolation and Molecular Identification of Halotolerant Bacteria Isolated from Saline Soil of Tehsil Shorkot District Jhang

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Type

Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Room 5

Abstract

In this research study, soil salinity, which is characterized by an excess of soluble salts in the soil, was investigated by assessing the electrical conductivity of soil samples collected from Tehsil Shorkot, District Jhang. The primary objective of the study was to isolate and molecularly characterize halotolerant bacteria dwelling in this saline soil. To achieve this, a series of scientific methods were employed. Bacteria isolation was performed through a serial dilution technique, followed by the cultivation of isolates on nutrient agar. Purification steps were carried out on MacConkey agar and Mannitol salt agar. Gram staining confirmed that the isolated bacteria were Gram-negative. The identification process became more comprehensive with the application of various biochemical tests, including IMViC, Urease test, Triple sugar iron test, catalase test, and motility test. The goal was to gain insights into the unique characteristics of these bacterial isolates. Furthermore, API 20E tests were conducted to reach species-level identification, enhancing the precision of the findings. One significant aspect of this research involved testing the bioremediation potential of these halotolerant bacterial isolates in saline soil. To assess their ability to mitigate salinity, the isolates were introduced into the saline soil samples. This experiment aimed to evaluate their effectiveness in reducing soil salinity, which is essential for improving soil quality and crop growth. Genetic identification played a crucial role in the study. The PCR (Polymerase Chain Reaction) was employed to extract DNA from the bacterial samples, followed by genetic identification using 16S rDNA sequencing. The results of DNA sequencing revealed a remarkable similarity of 99.26% with *Paenibacillus dendritiformis*, shedding light on the genetic relationship between the isolates and this known bacterial species. However, the bioremediation potential of these isolates did not yield highly satisfactory results. This finding suggests that further exploration is required to discover more strains with enhanced capabilities for effectively remediating saline soil.

Keywords

Salinity; Bioremediation; Halotolerant; *Paenibacillus dendritiformis*



PROCEEDING Emerging Scientist 2024



Onion Seed Production as Influenced by Foliar Application of PGPRS at Post-Anthesis Stage

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Presenter

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Type

Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Room 5

Abstract

Onions belong to the plant genus *Allium* and the origin of onion is believed to be Asia. Its bulbs are an important part of various relishes and sauces of different kinds. The complete plant in its immature phase, is used and called as the "onion salad". Onion (*Allium cepa* L.) is a biennial vegetable with regard to seed production. Seed yield is influenced by high temperature at the time of anthesis and seed setting in Punjab. Temperature of ovaries of flowers showing anthesis, which are isolated in the umbel, may reach up to 40-60°C and leads to abortion of embryos. As result, seed yield declines drastically and benefit: Cost ratio of onion seed producers is affected PGPRS have been used in different crops to induce stress tolerance and to increase yield. The present study was carried out to investigate the effect of different concentrations of PGPRS (Control, PsJN and FD17) on onion seed production. Bulbs of onion cultivar 'Phulkara' were obtained from Vegetable Seed Lab, Institute of Horticultural Sciences and sown during October 2016, keeping one feet bulb to bulb distance on ridges spaced 2.5 ft apart. All cultural practices and cautious measurements were implemented for raising a good crop yield. Following PGPRS were applied as foliar spray when an thesis started in onion seed crop. Crop was harvested during April 2017 and data was collected. Maximum values of height of scape (29.8 cm), number of scapes (10.3), yield of seed per plot (296.5 g), thousand seed weight (4.22 g), umbel diameter (5.29 mm), weight of seed per umbel (90.35 g), yield of seed per plant (3.31 g), mean germination time (15 days), plumule length (7.70 cm), radicle length (4.16 cm), seed germination percentage (85.33%), seedling fresh weight (47.49 mg), seedling dry weight (7.10 mg), seedling vigour index (1012.01) was recorded in (T2) FD17. Overall, it was concluded that FD17 shows best results as compared to PsJN.

Keywords

Onion; *Allium cepa*; Number of umbels; Yield



Honey-Mediated Synthesis of Cr₂O₃ Nanoparticles and their Potent Anti-Bacterial, Anti-Oxidant and Anti-Inflammatory Activities

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Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Room 5

Abstract

Green synthesis of nanoparticles has gained tremendous attention in recent era which is pertinent to their unique properties and broad applications. This approach is cost-effective, environment-friendly as well as highly biocompatible. In this research, Chromium Oxide Nanoparticles (Cr₂O₃-NPs) were synthesized by using *Apis mellifera* honey as a reducing and capping agent and their anti-bacterial, anti-biofilm, anti-oxidant and anti-inflammatory abilities were explored. Ultra violet-visible double beam spectroscopy revealed that chromium underwent d-d transition during synthesis of nanoparticles. The X-ray Diffraction (XRD) analysis verified that Cr₂O₃-NPs were crystalline in nature and average crystal size was 24 nm. Energy-dispersive X-ray (EDX) analysis confirmed that chromium and oxygen formed nano-composites in solution which possessed a stable form. Scanning Electron Microscopy (SEM) provided morphological characteristics of nanoparticles and proved that their average size was 20 nm. The Cr₂O₃-NPs displayed excellent anti-bacterial activity (minimum inhibition zone, 20 mm; maximum inhibition zone, 26 mm) against 30 selected clinical isolates of *Klebsiella pneumonia* as determined by agar well-diffusion method. Their antibacterial activity was considerably superior to that of three selected antibiotics including Gentamicin, Ciprofloxacin and Cefepime. However, no synergism was observed between nanoparticles and these antibiotics as calculated from Fractional Inhibitory Concentration Index (FICI) values all of which were >1. The synthesized nanoparticles possessed good biofilm inhibition potential (60 to 73%) at all concentrations (20 to 50 mg mL⁻¹) tested. The Cr₂O₃-NPs exhibited excellent anti oxidant activity (IC₅₀ = 128 mg mL⁻¹) which was nearly equivalent to that of ascorbic acid. Anti-inflammatory effect of Cr₂O₃-NPs was also significant (IC₅₀ = 549 mg mL⁻¹) and comparable to that of standard. Both anti-oxidant and anti-inflammatory capacities were found to increase with an increase in the concentration of Cr₂O₃-NPs. In conclusion, this work revealed that *Apis mellifera* honey-mediated synthesis of Cr₂O₃-NPs could be investigated for future biomedical applications.

Keywords

Chromium oxide; *K. pneumonia*; Nanoparticles; Honey



Alteration in Wheat (*Triticum aestivum* L.) Responses to Pre-Sowing Seed Treatment with Proline under Nickel Stress

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Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Room 5

Abstract

Wheat (*Triticum aestivum* L.) is a member of the Poaceae family and one of the most widely produced cereal crops in the world. It is the principal source of carbohydrate, and its importance in human and livestock diets cannot be overstated. Heavy metal stress plays a vital role in lowering the yields of wheat and many other cereal crops. A pot experiment was carried out in the Old Botanical Garden, Department of Botany, University of Agriculture Faisalabad, to check the wheat responses to pre-sowing seed treatment with proline under nickel stress. Two varieties (Punjab-2011 and Ghazi-2011) of wheat were used. The seeds of wheat were obtained from the Ayub Agricultural Research Institute (AARI) in Faisalabad. The seeds were sown in soil media. Two levels of proline as a pre-sowing seed treatment (water and 5 mM) and two levels of nickel stress (0 and 100 μ M) were applied. The experiment was arranged in a completely randomized design with four replications. Growth parameters like morphological, physiological, and biochemical were recorded after harvesting. The present experiment indicated that some morphological parameters are unaffected under nickel stress, but others predominately decrease. The physiological parameters were reduced under nickel stress. The pre-sowing seed treatment with proline indicated a varied response for reactive oxygen species; peroxidase activity was significantly enhanced, while CAT and SOD remained unaffected. The activities of total soluble sugar and ascorbic acid were dramatically reduced under nickel. However, flavonoid and anthocyanin contents show non-significant behavior. The mineral ions like Ca^{2+} shoot ions significantly improved under nickel stress and proline, but the uptake of other shoot ions such as Na^+ ions and K^+ did not change under both nickel and proline treatment. The wheat variety Punjab-11 showed more resistance to nickel stress as compared to Ghazi-11, and proline (5 mM) application reduced the deleterious effects of NiCl_2 on all wheat parameters. Analysis of Variance (ANOVA) was carried out using Co-stat software to find significant differences in various parameters.

Keywords

Heavy metal stress; L-Proline; Antioxidant activity



Comparative Analysis of Blood and Breath Test for Alcohol in Forensics

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Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Room 5

Abstract

This study is about the comparison of the two most rapidly used procedures in forensic sciences to test the concentration of alcohol in the body. These frequently used testing procedures are Blood Alcohol Concentration Analysis (BAC) and Breath Alcohol Concentration Analyzer (BrAC). Fifty subjects participated in the study, all the subjects were requested to provide blood samples and breathe samples in drunk condition. Some other information was also recorded to complete statistical analysis in this study that as age, height, weight, and amount of alcohol consumed. All these data were used in the calculation of blood alcohol concentration analysis by Potassium Dichromate Test and Widmark's Equation. A breath analyzer analyzes the concentration of alcohol in the body with the help of breath samples and values were recorded. The results of both procedures were compared analyzed with the help of a statistical analysis called Pearson product movement correlation. In this correlation, the value of $r = 0.992$, represent that there is a strong correlation between the result of these two testing procedures. Genetic factors of addiction were also analyzed in this study. The breath analyzer is reliable efficient quick, less costly, and portable. This device can test the concentration of alcohol in the body by a single test in just 30 seconds. Due to the portability of this device, it can also be used by law enforcement agencies traffic police, and doctors to test the concentration of alcohol in a very less time endless amount. This device can also work in different environment temperature and humidity conditions. This device can easily replace the conventional potassium dichromate test in forensic sciences. Binding sites found in this study can be used to develop antibodies and drug development for Neuropeptide Y protein. Antibodies for neuropeptide Y protein can be used to detect the expression of neuropeptide Y protein in the body to evaluate genetic factors of addiction.

Keywords

Blood; Alcohol analysis; Breath analyzer; Statistical analysis; Neuropeptide Y protein; Forensic science



PROCEEDING Emerging Scientist 2024



Advancing Agricultural Mechanization and Arable Land Management for Climate Resilient and Sustainable Agro-Food System

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Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Room 5

Abstract

Agricultural mechanization has played a significant role in boosting food production, aligning with the Zero Hunger Sustainable Development Goals by 2030 and the target of feeding over 9 billion people by 2050. Despite challenges such as resource constraints, labour shortages, and climate change, mechanized farming has increased a farmer's capacity from producing food for 2.5 persons to 130 people on average. However, this progress has led to adverse impacts on soil health and environmental quality. This study explores innovations in agricultural mechanization and arable land management, with a focus on climate resilience and sustainability in agro-food systems. Achieved performance optimization with highly efficient equipment, machines, and controlled traffic strategies such as minimum and zero tillage practices. The introduction of high lugs rigid driving wheels to high-power tractors in deep ploughing operations has significantly improved traction performance, reduced slippage by 163% with a higher draught force of 1.75 kN, reduced soil compaction and enhanced energy efficiency through efficient wheel-soil interaction. The study also introduces a combined tillage machine for subsoiling and rotary burying of straw, providing a comprehensive solution for deep ploughing and crop residue management, optimizing energy-efficient field operations. The results of the study demonstrate considerable success, displaying enhanced performance efficiency and productivity. These findings provide valuable insights for policymakers, researchers, and practitioners involved in developing robust and environmentally friendly agricultural practices within the context of climate-smart agriculture.

Keywords

Agricultural mechanization; Agro-Food system sustainability; Arable Land Management; Climate Change and Resilience; Food Security



Restoration of the Antioxidant Potential, Hepatoprotective and Renal Protective Effects in Male Albino Mice with Hydroethanolic Extract of *Taraxacum officinale*

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Type

Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Room 5

Abstract

Phytomedicine has found more relevance and is becoming more accepted as a complementary medical strategy. In the current study, phytochemical components of *Taraxacum officinale* were tested *in vitro* for their ability to act as antioxidants and their effects on common hepatoprotective measures. Using accepted procedures, the phytochemicals, cytotoxicity and pharmacological effect in a hydroethanolic (30:70 v/v) extract of *Taraxacum officinale* were determined. 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.wt.) 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. According to the study's findings, *Taraxacum officinale* has beneficial properties that may help prevent liver problems.

Keywords

Antioxidants; Renal protective; Phytomedicine; *Taraxacum officinale*; Hepatoprotective; Cytotoxicity



PROCEEDING Emerging Scientist 2024



The Prevalence of *Xanthomonas axonopodis* pv. citri with the Induction of Flavonoids Content from 2017-2020 in Pakistan

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Presenter

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Type

Poster Presentation

Track

Agricultural &
Biological Sciences

Location

Abstract

Citrus is an important crop of Rutaceae family with largest exportable commodity contributing about 95% of Pakistan's export. Plants are comprising as a rich storehouse of biochemical which plays a vital role in plant metabolism and defense mechanism against several pathogenic diseases. With the induction of certain pathogenic diseases, many metabolites are upregulated and down regulated within the plant defense mechanism. Citrus canker is one of those bacterial disease of citrus and caused by *Xanthomonas axonopodis* pv. citri which reduced the quality of citrus fruits with the disturbance of certain metabolites. This disease causes an extensive damage to citrus and severity of this infection varies with different varieties and the prevailing climatic conditions. This study hypothesized the prevalence of citrus canker disease in the cultivars of citrus from 2017 to 2020 with the induction of flavonoid contents. To check this hypothesis, we conducted the prevalence of *Xanthomonas axonopodis* pv. citri with the average, maximum and minimum temperature (°C), relative humidity (%), total precipitation (mm), and maximum wind speed (kmph) in different regions of Pakistan. For checking the regulation of flavonoids level, liquid chromatography mass spectrophotometer was used for analysis. We found that flavonoids present at young fruit/ leaves or fruit/leaves expanding stage and then fall to very low in concentration or under detectable levels in mature fruit/leaves with the degree of infection.

Keywords

Xanthomonas axonopodis; Citrus canker; Flavonoids; Rutaceae; Limonoids

04 Conference Track

- **Social Sciences & Humanities**

Session Chairs:



Prof. Dr. Rubina Hanif

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PROCEEDING Emerging Scientist 2024



Unmasking Predatory Publishing: Investigating the Proliferation of Journals Lacking Academic Standards and Expertise

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Type

Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

The exponential growth of academic journals in recent years has unveiled a pressing concern within scholarly publishing- the proliferation of journals that lack the essential qualities of experience, expertise, and academic standards. This research paper delves into the phenomenon commonly referred to as predatory publishing, a term describing journals and publishers that engage in deceptive practices with the aim of profiting at the expense of genuine academic research. Predatory publishing is a scourge that threatens the integrity of scholarly communication. It's not merely a fringe issue; it has insidiously infiltrated the academic landscape. This comprehensive study investigates the multifaceted nature of predatory publishing, shedding light on the various tactics employed by unscrupulous publishers to exploit the academic community. Through a systematic analysis of predatory journals and their operations, we aim to identify key characteristics and indicators that distinguish them from reputable publications. One of the most insidious aspects of predatory publishing is the false sense of legitimacy they project. Many use names and designs that closely mimic well-respected journals, making it difficult for authors and readers to distinguish between genuine and predatory outlets. Additionally, the predatory publishing model often involves charging exorbitant publication fees without providing the rigorous peer review and editorial processes that are the hallmark of reputable journals. The consequences of predatory publishing are far-reaching. They erode trust in the scientific publishing system, dilute the quality of research, and deceive authors into thinking they are contributing to the academic discourse. This research paper serves as a wake-up call, highlighting the critical need for increased awareness, education, and vigilance within the academic community to protect the integrity of scholarly research and safeguard the reputation of legitimate journals. This investigation is a call to action for stakeholders in academia, including researchers, institutions, and publishers, to collaborate in addressing the challenges posed by predatory publishing. It emphasizes the importance of upholding the highest academic standards in scholarly communication and provides a roadmap for identifying and combating predatory publishing practices. The findings and insights presented here serve as a crucial step toward ensuring the integrity and credibility of academic publishing in an era of rapid digital dissemination of knowledge, ultimately preserving the foundation upon which the scientific community thrives.

Keywords

Predatory publishing; Quality education; HC; Academic standards; Research journals



PROCEEDING Emerging Scientist 2024



Parental Bonding, Family Communication, Perceived Risk and Attitude towards Drug Use in University Students

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Presenter

Shahnila Tariq
University of
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Type

Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

This study intends to investigate the relationship between parental bonding, family communication, perception of risks associated with drug abuse and the attitudes developed to drug use that greatly contribute in the increasing rates of drug addiction in students now a day. It was hypothesized that parental bonding and perceived risk have a significant relationship with attitude towards drug use. A quantitative study is carried out for this research in which a correlational research design was used. A purposive, sampling technique was used to select the participants from a private and government university, with age range 18 - 28 years ($M = 25.3$, $SD = 2.5$). Parental Bonding Instrument, Family Communication Scale Perception of Risk Associated with Drug Abuse (EMCDDA, 2015) and Attitude towards Drug Abuse (EMCDDA, 2015) were the instruments used in the study. Results revealed that family communication and perception of risk were significantly correlated with the attitude towards drug use. Results revealed that there was a significant negative correlation of family communication with attitude of students towards drug abuse and a significant positive correlation of perception of risk of students towards drug abuse. Furthermore, the level of education of the mother and whether or not student had ever used drugs was significantly positively correlated with the attitude towards drug abuse. This study will help to create awareness for the neglected parents in the society to develop an effective parent- child relationship to nullify the developing drug addiction problems in young adolescents in Pakistan.

Keywords

Parental bonding; Parent-child communication; Perception of risk; Attitude; Drug abuse



PROCEEDING Emerging Scientist 2024



Endangered Language Preservation and Revitalization: Social Media Analysis of Punjabi Language

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Track

Social Sciences and
Humanities

Location

Room 3

Abstract

A treasure of knowledge is lost when a language dies and it is irretrievable. The Punjabi language is a precious linguistic treasure that holds deep cultural significance in Pakistan. However, it is currently facing a looming threat of endangerment due to the impact of globalization and urbanization. These changes have brought about profound shifts that have affected the vitality of the Punjabi language, making it imperative to take steps to preserve this valuable language for future generations. Hence, this study delves into the pivotal role played by social media platforms in preserving and revitalizing the Punjabi language, presenting it as a significant case study in the broader context of language preservation. For this purpose, the study will analyse popular social media platforms, Facebook and X (formally called Twitter), to investigate their role in the preservation and revitalization of the Punjabi language. The study aims to analyse the pages, groups and tweets in the Punjabi language during the selected time frame (March 2022 to March 2023) to investigate the issue. This research is expected to shed light on the potential of social media in preserving and revitalizing endangered languages like Punjabi. It will offer insights into the challenges and opportunities presented by these platforms, as well as the attitudes and motivations of Punjabi-speaking communities towards language preservation. The findings will contribute to a broader understanding of the role of digital technology and social media in language conservation efforts and offer valuable recommendations for stakeholders, language enthusiasts and policymakers.

Keywords

Endangered language; Punjabi; Social media; Language preservation; Revitalization; Language revitalization



PROCEEDING Emerging Scientist 2024



Psychosocial Determinants of Emotional and Behavioral Problems of Adolescents in Boarding Schools

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Social Sciences and
Humanities

Location

Room 3

Abstract

Boarding schools can be regarded as a stressful environment to students and multiple factors may lead to stress for students staying in boarding schools, including feelings of homesickness, academic pressures and lack of parental support which may significantly contribute to the development of mental health issues. The present study aimed to determine the predictive role of perceived parental support and feelings of home sickness in emotional and behavioural problems of adolescents residing in boarding schools. It was further intended to determine the moderating role of emotional regulation in predicting emotional and behaviour problems from homesickness. A purposive sample (N = 560) comprised of both girls and boys aged 15-18 years living in boarding schools for at least one year enrolled in grade 8-10. Measures of Perceived Parental Support Scale, Utrecht Homesickness Scale, Emotional Regulation Questionnaire and Emotional Behavioral Problem Scale for Adolescents were used to assess the study constructs. Findings revealed that favorable perceptions of parental support negatively predicted various dimensions of emotional and behavioral problems of adolescents including depressive symptoms; defiance and delinquency; anxiety, perceived worthlessness, rejection, loneliness; poor self-image; aggressive behaviour; academic difficulties; and psychosomatic troubles. Similarly, positive perceptions of parental support also negatively predicted homesickness and its dimensions including missing family and friends, adjustment difficulties, and ruminations about home. Results further demonstrated that emotional regulation buffered the relation between lack of parental support and experiencing emotional and behavioral problems in boarding schools among adolescents. Demographical groups exhibited significant differences along gender, grade, birth order and family system. Findings of the study provide pragmatic insight regarding imperative role of parental support and serve as baseline foundation for designing customized interventions for boarding school students and parenting guidelines for optimizing the experiences of adolescents of being away from homes.

Keywords

Adolescents; Homesickness; Parental support; Emotional regulation; Gender



PROCEEDING Emerging Scientist 2024



Horizontal Proliferation Based-Criteria for the Non-NPT Nuclear Weapon States (NWS) in the Nuclear Suppliers Group (NSG): A Critical Discourse

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Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

Most of the literature regarding non-proliferation, commonly debates about disarmament of the Non-NPT NWS and it does not discuss mainstreaming. Moreover, the literature that indicates about mainstreaming of the Non-NPT NWS (India, Pakistan and Israel), discusses mainstreaming within the regime i.e. NPT; which appears to be a rare possibility. Even if mainstreaming in the Nuclear Suppliers Group (NSG) is discussed, it's not clearly defined how the mainstreaming is possible, as incremental approach is lacking. Realistically, the mentioned states are not willing to roll back their nuclear program, thus mainstreaming options need to be explored for them. The NSG has a salutary impact on information sharing and countering proliferation risks, as it is an informal arrangement that has established some export-related rules. Yet, while remaining outside the framework of established non-proliferation treaties, it helped institute some recognizable non-proliferation norms and best practices. This research will explore the contours of the criteria evolved so far to mainstream Non-NPT NWS (India, Pakistan and Israel) into the NSG framework, which is considered by many scholars and stakeholders alike, to be an informal supportive arrangement dealing with the non-proliferation goals. The research will explore how the international community can ensure mainstreaming of Non-NPT NWS into the portions of NPR in order to control the proliferation of nuclear weapons. Would stringent measures under Nuclear Non-Proliferation Regime (NPR), in anyway, be effective in regulating the behaviour of the Non-NPT Nuclear Weapons States, given the current criteria-based approach being preferred by the international community? Finally, what are the reasons behind adoption of current criteria-based approach by the international community which appears to prioritize issue of 'vertical proliferation' ignoring in large the 'horizontal proliferation'?

Keywords

Nuclear Supplier Group (NSG); Nuclear Non-Proliferation Regime (NPR); Non-NPT NWS



PROCEEDING Emerging Scientist 2024



Internet Gaming Addiction as a Determinant of Attention Deficit Hyperactivity Symptoms in Emerging Adults

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Presenter

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Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

The purpose of this study is to examine the impact of internet gaming addiction on the psychological and social health of the emerging adults. After detailed literature review, it was hypothesized that: 1) there is likely to be a relationship between video gaming disorder and ADHD symptoms among emerging adults. 2) Internet Gaming Disorder is likely to predict the ADHD symptoms among emerging adults. 3) Internet Gaming Disorder is likely to be a predictor of ADHD-A symptoms among emerging adults. 4) Internet Gaming Disorder is likely to be a predictor of ADHD-B symptoms among emerging adults. A purposive sample of 400 emerging adults with internet gaming addiction was taken from different academic institutes. A self-developed demographic sheet was administered along with the Internet Gaming Disorder Scale Short-Form and Adult ADHD Self-Report Scale (ASRS-v1.1 Symptom Checklist). For the analysis of data, descriptive statistics and Pearson Product Moment Correlation Coefficient and linear regression were applied. Results showed a significant positive relationship of Internet Gaming Disorder with overall ADHD symptoms ($r=0.609^{**}$, $p<0.01$), with ADHD-A symptoms ($r=0.558^{**}$, $p<0.01$) and ADHD-B symptoms ($r=0.588^{**}$, $p<0.01$). Analysis further reveals that IGD contributes 37% to be significant predictor of ADHD symptoms ($\Delta R^2 = 0.37$, $p<0.01$). It means as IGD increases by 1-unit it brings change in ADHD symptoms by 37 times in emerging adults. Further, IGD contributes 30% to be significant predictor of ADHD-A symptoms ($\Delta R^2 = 0.309$, $p<0.01$). It means as IGD increases by 1-unit it brings change in ADHA-A symptoms by 30 times in emerging adults. Moreover, IGD contributes 34% to be significant predictor of ADHD-B symptoms ($\Delta R^2 = 0.344$, $p<0.01$). It means as IGD increases by 1-unit it brings change in ADHD-B symptoms by 34 times among emerging adults. Research has avenues for future research.

Keywords

Internet Gaming Disorder; ADHD symptoms; Emerging adults; Predictor; Social health



PROCEEDING Emerging Scientist 2024



Perceived Parenting Styles, Embitterment and Psycho Social Problems in University Students

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Presenter

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Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

The purpose of the present study is to examine the relationship between perceived parenting style, Embitterment and psycho social problems in university students. It was hypothesized that there would be a significant relationship between perceived parenting styles, embitterment and psycho social problems in university students. And the perceived parenting style would have a significant relationship with psychological distress in university students. The relationship between perceived parenting style and Embitterment is moderated by gender. Representative sample of 300 students was approached from public and private university sectors of Sialkot region via using the convenient sampling technique. A self-developed demographic sheet was administered along with Perceived Parenting Style Scale, Post Traumatic Embitterment Scale and Students Problems Checklist. Descriptive and inferential statistics were used in this study. A correlational research design was used to assess the relationship between independent and dependent variables, to check the differences t-test, to check the impact Pearson product correlation and regression analysis was used for analysis. Research findings revealed that perceived parenting styles have a statistically significant relationship with embitterment, and psycho social problems among the university student. It was revealed that students with authoritative parenting style have less psychosocial problems and embitterment tendencies, while the authoritarian and permissive parenting styles did have effect on embitterment and psychosocial problems. Simple Linear Regression analysis revealed that authoritative parenting style explained 26% variance in embitterment tendencies. Uninvolved parenting style explained 57.7% variance in embitterment, whereas, the permissive parenting style explained the 36.8% variance, authoritarian parenting style explained 46.4% variation. The research findings are discussed in the light of current situation and its future implications.

Keywords

Embitterment; School problem checklist; Psychosocial problems; Parenting styles; Sampling technique



PROCEEDING Emerging Scientist 2024



Cyber Ostracism and Help Seeking Attitudes Among Youth in Pakistan: Mediating and Moderating Roles of Social Support and Empathy

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Presenter

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Track

Social Sciences and
Humanities

Location

Room 3

Abstract

Cyber ostracism, stemming from excessive social media use, can inflict significant psychological trauma on individuals. This study aimed to investigate the connection between cyber ostracism and attitudes toward seeking help among Pakistani youth. Furthermore, the research sought to explain the potential roles of social support and empathy as mediator and moderator in this relationship. In a comparative cross-sectional study, the experiences of cyber ostracism and help seeking attitudes among youth were examined. The sample size consisted of $N = 400$ participants (age range 20-35 years; $M = 24.26$, $S.D = 3.40$). Data was collected through snowball sampling with survey forms distributed through online platforms for data collection. The findings revealed that cyber ostracism positively predicted a tendency to seek help. Gender also influenced experiences of cyber ostracism and help-seeking attitudes with males experiencing more cyber ostracism as compared to females. Help seeking attitudes were also observed more in males than females. Empathy moderated the relationships between cyber ostracism and help seeking attitudes while social support mediated the relationship between cyber ostracism and help seeking attitudes. By shedding light on the multifaceted connections between cyber ostracism and help seeking attitudes, this research provides valuable insights into the unique challenges faced by individuals who fall victim to online ostracism. Furthermore, it lays the groundwork for future scholars seeking to delve deeper into this critical area of study, offering a foundation for continued exploration and expansion of our understanding in this domain.

Keywords

Cyber ostracism; Cross-sectional study; Help-seeking attitude; Young Adults; Mediation; Moderation



PROCEEDING Emerging Scientist 2024



Teachers' Perspectives on School Students' Mental Health and the Role of School-Based Counseling Facilities

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Presenter

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Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

Schools are now facing unprecedented challenges due to increased rate of mental health problems across the world. Schools are considered an ideal place to provide students with mental health services because students spend at least 7-8 hrs a day in schools. The main concern is that whether the teachers are fully prepared and have deeper understanding to manage these mental health issues in students or not? Ignorance of teachers' perception about students' mental health issues is posing a constant threat and becoming a challenge to educational alternative programs to achieve its selected goals. Therefore, the present study was aimed to explore teachers' perceptions about student's mental health problems and also discover importance of school based mental health facilities. So for this purpose, exploratory study was conducted with 3 independent focus groups of secondary school teachers located in Rawalpindi and Islamabad. Researcher carried out thematic analysis to emerge the themes of the discussion. Five major themes were identified such as: (1) Mental health problems are not only disturbing psychological well-being of students but also affecting their academic performance badly. (2) Teachers share a very strong bond with students and learners also like to rely on their teachers for their support. (3) Keeping students - teachers' interaction in view, teachers can support or improve students' mental health problem through counseling if they are trained properly. (4) School psychologists or counselors need to be hired in schools setting to work with students who are undergoing psychological issues. (5) Parents involvement directly related to students' wellbeing. It is endorsed by current study findings that school administrations need to organize training programs for teachers through which they can be trained properly to tackle mental health problems in students. Schools' authorities and educational departments need to hire psychologists and initiate different programs on wellbeing as a part of educational alternatives.

Keywords

Mental Health; Teacher; Psychologist; Wellbeing; Interaction



PROCEEDING Emerging Scientist 2024



Perceived Parental Conflict, Emotional Expression and Wellbeing in Young Adults

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Presenter

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Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

Relationships play an indispensable role because they shape our behavior, emotions and thought and have profound effect on mental functioning and wellbeing. The aim of this study was to find the relationship between perceived parental conflict, emotional expression and wellbeing in young adults. It was hypothesized that: 1) There is likely to be relationship between perceived parental conflict and emotional expression in young adults, 2) There is likely to be relationship between perceived parental conflict and wellbeing in young adults, 3) There is likely to be relationship between emotional expression and wellbeing in young adults and 4) Perceived parental conflict is likely to predict emotional expression and wellbeing in young adults. A random sample of 512 young adult (256 males and 256 females), age ranging from 18 to 24 years was taken from different private universities of Sialkot. A self-developed demographic sheet along with Conflict Properties subscale of Children's Perception of Interparental Conflict (CPIC) developed by Grych, Seid and Finchman in 1992 was administered. Berkley Expressivity Questionnaire (BEQ) consists of three independent subscales: Positive emotionality, negative emotionality and impulse strength and Personal Wellbeing Index-Adult (PWI-A) developed by The International Wellbeing Group in 2013 were also administered to participants of research. For data analysis, descriptive statistics was used to calculate mean and frequencies of demographic variables and characteristics. Correlational analysis was done to determine relationship between variables. Regression was used for predictive analysis. Results shows significant positive relationship of perceived parental conflict with negative emotionality ($r=0.637$, $**p<0.01$) and impulse strength ($r=0.499$, $**p<0.01$) whereas perceived parental conflict has significant negative relationship with positive emotionality ($r=-0.409$, $**p<0.01$) and wellbeing ($r=-0.609$, $**p<0.01$). Further, wellbeing has significant negative relationship with negative emotionality ($r=-0.567$, $**p<0.01$) and impulse strength ($r=-0.418$, $**p<0.01$) whereas wellbeing has significant positive relationship with positive emotionality ($r=0.549$, $**p<0.01$).

Keywords

Perceived parental conflict; Emotional expression; Wellbeing; Young adults



PROCEEDING Emerging Scientist 2024



A Policy Recommendation Framework for the Centralized Healthcare Waste Incineration System

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Presenter

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Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

This study aims to investigate and explore the existing practices and processes of Healthcare Waste Management (HCWM) in both public and private hospitals in Hyderabad Sindh. The research holds significance in shedding light on the implementation of Hospital Waste Management (HWM) rules 2005 in Pakistan and demonstrates to understand the reasons behind the mishandling of healthcare waste, with emphasis on disparities between public and private hospitals. The study focuses on assessing the environmental/ecosystem and social risks associated with the current HCWM practices using a thematic analysis and Risk Assessment Matrix based on the data gathered through semi-structured interviews. The author undergone through the interviews collected through notes, voice recording, video recording and wrote down complete scripts of all interviewees who participated in the semi-structured interviews and developed a matrix from which suitable themes were derived breaking down each single information and categorized the environmental/ecosystem and social risks of incineration method feasibility as an authentic method of waste disposal. The study findings suggest that both public and private healthcare facilities were generating similar categories of healthcare waste, including general waste, infectious waste, sharps, and pharmaceutical waste along with mismanagement of healthcare waste. According to the HWM rules 2005 on-site waste segregation and collection is the most significant step to be considered. During the visits of the hospitals, the waste segregation practices were observed present and satisfactory at some extent by the hospital management in private hospitals. However, the situation of the public hospital with respect to waste segregation and collection was overall unsatisfactory. The findings also contribute to improving HCWM practices, ensuring compliance with regulations and promoting sustainable waste management solutions in healthcare facilities. The study endeavors to recommend and propose a policy framework for the initiation of a Centralized Healthcare Waste Incineration System (CHCWIS) in Hyderabad Sindh.

Keywords

Healthcare waste management; Public and private hospitals; Policy framework; Centralized healthcare Waste incineration system; Environmental and social risk; Risk assessment



PROCEEDING Emerging Scientist 2024



Investigating the Moderating Contribution of Mothers Educational Level with Resilience and Stress Among School Children

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Presenter

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Type

Oral Presentation

Track

Social Sciences and
Humanities

Location

Room 3

Abstract

The aim of this study would be to determine Investigation the moderating contribution of mothers' educational level with resilience and stress among school children. School going children are going through a lot due to age transition period especially when they are between 15 to 18 years of age. In this period, they experienced heightened emotionality. If they cannot perceive, understand, regulate and function with their emotions, it will leave persistent marks on their behavior and personality. While going through these changes primary caregiver plays vital role. As mothers are the primary source to provide such support which can help children throughout this phase of life. They can help children to understand these changes as well as provide a healthy support system to make them more resilient to face these necessary challenges. Resilience defined as "the process of adapting well in the face significant sources of stress, such as problems related to family and relationship, health, workplace and financial stressors. In the light of literature review following hypothesis were formulated: 1) There would be significant moderating impact of mothers' educational level between resilience and stress among school children. 2) There would be a significant difference between age groups on resilience among school children. Sample of present study was comprised of 100 adolescents (50 females and 50 male). The sample was recruited from different schools of Punjab, Pakistan. The age range of entire sample would be between 15 years to 18 years. The measures that was used in this study are; Demographic Information Form, Indigenous Scale of Resilience in Urdu, Urdu version of depression, anxiety and stress scale [DASS]. In order to interpret the data following statistics was used. Descriptive statistics (mean, standard deviations) was used for getting a better statistical view of characteristics of sample of the data in a summarized way. Further, moderating effect was assessed by process macro by Andrew F. Hayes. Data was computed, by using Statistical Package for Social Sciences-24 (SPSS, V-24.0).

Keywords

Mothers; Educational level; Resilience; Stress; School children



PROCEEDING Emerging Scientist 2024



Embracing Ambiguity: The Key to Unlocking Entrepreneurial Success

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Presenter

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Type

Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

The primary aim of this study was to investigate the significance of ambiguity tolerance in predicting entrepreneurial success among a purposive sample of 490 entrepreneurs drawn from the incubation centers and co-working spaces of Multan, Lahore, Islamabad, and Rawalpindi. The study utilized two key scales for measurement: Career Decision Ambiguity Scale and the Subjective Entrepreneurial Success Scale. Results revealed a robust positive relationship between ambiguity tolerance and subjective entrepreneurial success. Significant group differences were also found within gender with male scoring higher in entrepreneurial success. The presence of having entrepreneurial role model and length of business tenure also positively strengthened the level of ambiguity tolerance and entrepreneurial success. These findings have profound implications for entrepreneurship and entrepreneurial career development. They suggest that individuals with a higher tolerance for ambiguity are better equipped to navigate the uncertainties and complexities of entrepreneurial ventures, ultimately enhancing their chances of achieving subjective entrepreneurial success.

Keywords

Entrepreneurship; Role model; Business success; Ambiguity tolerance



PROCEEDING Emerging Scientist 2024



Social Stigmatization and Social Appearance Anxiety: Impact on Quality of Life in Facial Skin Challenges

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Type

Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

This ground-breaking research probes the intricate interplay of social stigmatization and social appearance anxiety, unravelling their profound impact on the quality of life for individuals grappling with facial skin challenges within the unique sociocultural context of Pakistan. The study used three pivotal measurement scales: The Perceived Social Stigmatization Questionnaire, the Social Appearance Anxiety Scale and the Dermatology Life Quality Index. Adopting a quantitative research approach, data from 250 participants were collected from various hospitals and clinics of Islamabad and Rawalpindi. The results revealed that perceived social stigmatization and social appearance anxiety negatively predicted quality of life among individual with facial skin problems. On the other hand, perceived social stigmatization was positively related with social appearance anxiety. Group differences demonstrated that women, being employed and facing facial skin problem for extended duration reported higher perception of social stigmatization and social appearance anxiety along with poor quality of life as compared to their counterparts. These findings highlight the detrimental effects of perceived social stigmatization and social appearance anxiety on the quality of life in this population. These findings highlight the importance of addressing social stigmatization and social appearance anxiety in interventions and support programs aimed at improving the quality of life for individuals with facial skin problems.

Keywords

Perceived social stigmatization; Social appearance anxiety; Quality of life



PROCEEDING Emerging Scientist 2024



Unveiling Synergistic Dynamics of Organizational Virtuousness and Psychological Capital in Shaping Ethical Climate among Bank Employees

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Presenter

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Type

Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

This study aimed to examine the symbiotic relationship between organisational virtuousness and psychological capital, investigating their collective impact on shaping ethical climate among employees of banking sector of Pakistan. With a purposive sample of 400, encompassing tellers and operational managers, study employs a quantitative approach to unravel the intricate dynamics that underpin ethical behaviour in the banking industry. To measure these dynamics, we employ three key scales: Organisational Virtuousness Scale, Psychological Capital Questionnaire and Ethical Climate Questionnaire. Findings revealed a robust positive correlation of organisational virtuousness and psychological capital with ethical climate at workplace. Group differences indicated that male employees, having extended job experience and working as manager operation reflected a better perception of organisational virtuousness, higher inclination of psychological capital and better perception of ethical work climate as compare to their counterparts. "Positive Organisation Scholarship" aligns with his assertion that excellence is a product of habituation and training. The study seeks to contribute to the evolving discourse on ethical climates within organisation, providing valuable insights for banking institutions.

Keywords

Organisational virtuousness; Banking sector and Psychological capital; Ethical climate; Organisation; Symbiotic



PROCEEDING Emerging Scientist 2024



Unpacking First-Time Mothers' Postpartum Depression: Role of Negative Affectivity and Agency Dynamics

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Presenter

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Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

This study explores the intricate emotional terrain of postpartum depression among first-time mothers, shedding light on the influential roles played by negative affectivity and perceived sense of agency. Leveraging established measurement scales, including the Negative Affectivity Questionnaire, Perceived Sense of Agency Questionnaire and Postpartum Depression Questionnaire to assess the study constructs. The research adopts a self-report method, gathering data from a diverse cohort of 250 first-time mothers across hospitals and clinics in Islamabad and Rawalpindi. The findings of this investigation reveal that higher levels of negative affectivity contributed positively to postpartum depression; whereas perceived sense of agency facilitate in mitigating the experiences of postpartum depression. The study further unveils group disparities on various social demographics, indicating that young aged, unemployed, having baby girl after one year of marriage exhibit heightened levels of negative affectivity coupled with lower levels of perceived sense of agency, thereby, intensifying their vulnerability to postpartum depression. This research offers valuable insights into the nuanced factors contributing to postpartum depression among first-time mothers. It underscores the imperative need of designing interventions tailored to the unique challenges inherent in the critical postpartum period. It emphasizes the necessity of empowering first-time mothers through targeted strategies that address influential factors contributing to baby blues and guides the formulation of practical and effective interventions aimed at fostering a positive and fulfilling postpartum experience for first-time mothers.

Keywords

Negative affectivity; Perceived sense of agency; Post partum depression; Critical; Influential factors



PROCEEDING Emerging Scientist 2024



Impact of Managed Care on Patients Trust in Medical System of Punjab, Pakistan

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Track

Social Sciences and
Humanities

Location

Room 5

Abstract

Patients opinions on managed care are ambiguous. Some see it as a positive development that has contributed to lowering expenses and raising care quality. Others, see it as a detrimental development that has resulted in limited access to care, poor care quality and diminished faith in healthcare system. The objective was to investigate the impact of supervised care within the healthcare system on patients' confidence levels in the city of Sargodha, Pakistan. The study involved surveying a sample of 130 individuals who were enrolled in managed care plans. To assess patient confidence, a specialized confidence scale was employed, which aimed to gauge participants' confidence in critical aspects of their respective care plans. Study explored intricate relationship between patient satisfaction with the care they received, standard of care provided by healthcare professionals and level of trust patients had in managed care. The findings of the study uncovered a rather disconcerting trend. It became evident that individuals exhibited a generally low level of trust in their health insurance, particularly in instances where insurance plans imposed limitations on choice of hospitals and healthcare providers and when they denied coverage based on an individuals' medical history. These factors seemed to erode patient trust in the managed care system, highlighting a significant area of concern in the healthcare landscape of Sargodha. However, what made this study particularly intriguing was the discovery that patient trust in managed care did not exhibit a positive correlation with their overall satisfaction regarding managed care plans or quality of care provided by healthcare practitioners. The unexpected finding was, as one might intuitively assume that trust in the healthcare system would naturally align with patient satisfaction. They underscore the pressing need for initiatives and interventions aimed at enhancing patients trust in managed care plans in Sargodha. It is evident that addressing these trust-related issues can potentially lead to improvements in patient satisfaction levels and quality of care received. This could have far-reaching consequences for healthcare ecosystem in Sargodha, fostering an environment in which patients feel more confident, satisfied and ultimately, healthier. Study serves as a vital contribution to the understanding of dynamics between trust, patient satisfaction and quality of care within the managed care system in Sargodha, Pakistan. It calls for strategic efforts and reforms to rebuild patient trust and, in turn, elevate the overall healthcare experience for individuals enrolled in managed care plans in the region. Healthcare stakeholders can work towards a more effective and patient-centric healthcare system in Sargodha.

Keywords

Managed care; Medical system; Health; Patient trust; Healthcare



PROCEEDING Emerging Scientist 2024



Analyzing Perspectives: Muslims Wellbeing through Islamic and Western Psychotherapy

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Presenter

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University of
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Type

Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

The escalation of psychological challenges within the Muslim community is evident. Western psychotherapies, however, fall short in addressing the spiritual dimensions of human existence. Islam, as a comprehensive guide to life, values, and personal tribulations, provides profound insights into individual suffering and its consequences. The integrative psychotherapeutic model emerges as a more precise and advantageous approach for conditions like anxiety and depression. Models rooted in Sunnah and Shariah consistently illuminate inherent human imperfections, elucidating their role in rendering individuals susceptible to psychological issues. Islamic psychotherapeutic approaches, characterized by their holistic nature, not only fortify one's connection with Allah by overcoming personal inadequacies and transgressions but also foster a positive self-perception and outlook on the world.

Keywords

Islamic psychotherapy; Holistic; Integrative; Western psychotherapy; Personal sufferings; Anxiety; Depression; Shortcomings



PROCEEDING Emerging Scientist 2024



Psychological Impact of Climate Change on Quality of Life

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Type

Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

Climate change is becoming a serious issue in the world, caused by human factors, which leads to global warming, damage to ozone layers and an increase in global temperature. Countries like Pakistan do not have sufficient resources to deal with the consequences of climate change hence the impact of climate change is drastic. Climate change and its associated perceived risks such as flooding, forest fires negatively impact quality of life due to experiencing variety of eco-emotions including anxiety, depression, grief and guilt. The objective of the study is to explore the impact of climate change risk perception on quality of life and the role of eco-emotions and pro-environmental behavior. A cross-sectional quantitative study design was used for the present study with a sample of 360 participants selected through convenient sampling technique. In order to measure the study constructs, Hogg's eco-anxiety scale, Eco-guilt questionnaire, Eco-grief questionnaire, Pro-environmental behavior scale and WHO-QOOL scale were administered. To measure perceived climate change risk perception a scale was developed. Factor analysis identified four factors i.e., knowledge, attitude, cause and effect. For hypothesis testing, correlation analysis, multiple regression analysis, moderation analysis, and t-test were computed. Results indicate that climate change risk perception has a significant positive relationship with pro-environmental behavior, quality of life and a significant negative relationship with eco-emotions. Furthermore, the moderating role of eco-emotions as well as pro-environmental behaviors between climate change risk perception and quality of life was also established. Moreover, study also provided group differences with respect to study variables. The present study provides insight in factors associated with climate change including risk perception, eco-emotions and pro-environmental behavior impacting quality of life.

Keywords

Climate change risk perception; Eco-emotions; Pro-environmental behavior; Quality of life; Ozone layer



PROCEEDING Emerging Scientist 2024



Enlightening Knowledge for Decision-Makers: Afghan Immigrant Mental Health is on the Brink of Collapse

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Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

Afghan refugees have suffered for decades because of many issues including lack of freedom which leaves their voices unheard, causing detrimental effects on their mental health such as post-traumatic stress disorder, anxiety, and depression among Afghan migrants in Pakistan. Therefore, the aim of the present research is to identify mental health including, psychological distress and psychological wellbeing in Afghan migrants in Pakistan. The sample was collected through nonprobability purposive and snowball sampling. Total of hundred Afghan migrants including fifty men and fifty women were included in the study. Results showed that Afghan migrant living in Pakistan showed more psychological distress and their psychological wellbeing is also low. Women Afghan migrants were experiencing more psychological distress and less psychological wellbeing as compared to men. The demand of the time is to promote mental health services, psychological training, awareness campaigns related to diversity and inclusion of Afghan migrant in Pakistani culture, creating awareness for acceptance of migrants in host culture, initiatives to support re-connecting with loved ones, are among the many recommended measures needed to manage this alarming situation. Moreover, to tackle the mental health issues of migrants during this humanitarian crisis, non-medical professionals should be trained to convey basic counselling. This also requires an immediate action plan from government and public health officials to mitigate this impending catastrophe.

Keywords

Afghan migrants; Psychological distress; Psychological wellbeing; Host culture



PROCEEDING Emerging Scientist 2024



Unraveling the Threads of Personality Traits, Online Feminist Attitudes, and Cyber Harassment for Social Media Users

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Poster Presentation

Track

Social Sciences and
Humanities

Location

Room 5

Abstract

With the rise of internet access in Pakistan, the youth have embraced social media for communication and self-expression. These platforms, while fostering interaction and sharing, have also been studied for correlations with users' personality traits. They have become vital for feminist discourse, but have also seen an increase in cyber-harassment. This study aims to gain insight into the role of the five personality traits (conscientiousness, neuroticism, extraversion, agreeableness, and openness to experience) and attitudes toward online feminism, in users' susceptibility to cyber-harassment experiences in the context of online social networks. The study employs a quantitative approach with a purposive sample of 512 social media users. To measure these dynamics, we employ three key scales: Big Five Inventory, Attitudes toward Online Feminism and Cyber Harassment Experience. Findings revealed a robust negative correlation of agreeableness and conscientiousness with cyber-harassment. Those social media users who are low on these traits experience high cyber-harassment. Extraversion and openness to experience are positively associated with attitudes toward online feminism. Social media users with these traits easily express their thoughts and reactions about events and trends, on social media. Group differences indicated that individuals who experience cyber harassment on social media are high on neuroticism, attitudes toward online feminism and its sub-scales i.e., pro-feminist, anti-feminist and feminist practices. Cyber-harassment on social media is a dynamic process and so are human traits. This research provides insights into social media users personality traits, their attitudes toward online feminism and cyber-harassment experiences. This study could aid in developing effective interventions to address cyber-harassment. In Pakistan, where internet and social media use is rising but cyber laws are inadequate, cyber-harassment is increasing. Therefore, this study could be useful for legislative bodies. This study used cross-sectional data and is quantitative. Future research should be longitudinal and qualitative for a deeper understanding.

Keywords

Personality traits; Online feminism; Cyber harassment; Social media

03 Conference Track

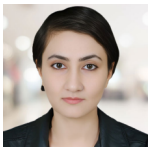
• Physical Sciences & Engineering

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PROCEEDING Emerging Scientist 2024



Design, Synthesis, and Biological Appraisal of Some Vital Drugs Linked Heterocyclic Scaffolds

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Presenter

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

In Pharmacophoric Integration approach, two or more pharmacophoric moieties of different bioactive molecules or drugs are combined in a single structural unit to produce hybrids with better affinity and efficacy, enriched selectivity profile and dual mode of action. Most of the drugs (85%) are heterocyclic in nature. The ability of heterocycles to engage in a wide variety of intermolecular interactions, allows them to bind with enzymes in a multitude of ways. The wide range of ring sizes and structural variations allows heterocycles to match the diverse range of enzyme binding pockets. Therefore, the heterocyclic small and hybrid molecules are regarded as the drugs of future. Hybrid compounds can be constructed by connecting pharmacophore subunits directly or with a spacer unit. Likewise, there can be drug-nondrug or drug-drug conjugates. We have synthesized drug-heterocyclic hybrid molecules and screened them for various enzyme inhibitory and other biological assessments. These include Sulfonamide-Pyrazolones Hybrids, 2-Aminothiazoles-amantadine Conjugates and Drugs Linked Thiazolyl-coumarins. The kinetic studies analyzed by Line weaver-Burk plots revealed the mode of inhibition. Binding affinity and interaction were evaluated through molecular docking. The hybrids obtained exhibited potent enzyme inhibition several fold better than standard drugs. The lead compounds identified will be subjected to further structural optimization making them potential candidates for drug discovery.

Keywords

Dual-acting hybrids; Heterocyclic compounds; Drugs-heterocyclic conjugates; Enzyme inhibition



PROCEEDING Emerging Scientist 2024



Design, Synthesis and Structural Studies of Some New Azoles as Potential Biological Scaffolds

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Presenter

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Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Azole frameworks serve as privileged scaffolds in the contemporary drug design paradigm owing to their unique physicochemical profile that promotes the development of highly selective, physiological benevolent chemotherapeutics. Several azole nuclei function as bioisostere in medicinal chemistry and prompt the development of tailored therapeutics for targeting the desired biological entities. Besides, the azole scaffold forms an integral part of advanced drug designing methodologies, such as target template *in situ* drug synthesis, which assists in the rapid identification of the hit molecules from a diverse pool of leads; and direct biomolecule-drug conjugation, along with bioorthogonal strategies that ensure localization and superior target specificity of the directed therapeutic. Lastly, the structural diversity of the azole framework and high-yielding click synthetic methods provide a comprehensive Structure-Activity Relationship (SAR) analysis for design optimization of the potential drug molecules by fine-tuning the placement of different substituents critical for the activity. Azoles are nitrogen, sulfur and oxygen-containing - compounds with a five-membered ring system that comprises thiadiazole, oxadiazole, triazole, imidazole, isoxazole, pyrazole and other rings. Mainly known as antifungal agents, azole derivatives demonstrate many other biological properties including anti-diabetic, anti-inflammatory and anticancer activities. Azoles also show α -glucosidase inhibition, which includes derivatives of thiadiazoles, oxadiazoles, triazoles, diamine-bridged coumarinyl oxadiazole conjugates with phenylenediamine, benzidine and 4,4'-oxydianiline linkers and 5,6-diaryl-1,2,4-triazine thiazoles. A new series of 1,3,4-oxadiazoles, 1,2,3-triazoles, pyrazoles and thiazoles have been synthesized and characterized by different spectroanalytical techniques. Fully characterized molecular structures were further studied by single-crystal X-ray diffraction where applicable. Density functional theory calculations at the B3LYP/6-31+G(d) level were performed to compare X-ray geometric parameters, molecular electrostatic potential (MEP) and frontier molecular orbital analyses of synthesized compounds. The MEP analysis revealed that these compounds are nucleophilic. Moreover, the non-covalent interactions have been characterized using the NCIplot index. Frontier molecular orbitals (FMOs) analysis was performed for the evaluation of kinetic stability. All synthesized compounds were screened *in vitro* for different biological assays and diverse biological trends have been observed in different classes.

Keywords

Design; Azole; XRD; Electrostatic; Nucleophilic



PROCEEDING Emerging Scientist 2024



Synthesis and Characterization of Novel SEBS-g-MA/OMMT Nanocomposites with Thermal and Mechanical Resilience

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Presenter

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

A hybrid polymer nanocomposite polystyrene-b-poly(ethylene-ran-butylene)-b-polystyrene grafted maleic anhydride with organically modified montmorillonite; SEBS-g-MA/OMMT was synthesized through solution casting methodology with varying clay proportions. Organophilic character was introduced into the inorganic clay platelets using 2,2-bis[4-(4-aminophenoxy) phenyl]propane (BAPPP) as an intercalating agent using ion exchange method which was confirmed by XRD patterns. Nanocomposite films were investigated by FTIR, XRD and SEM for their morphology. The XRD pattern of the nanocomposite film revealed the homogeneous dispersion of platelets into the matrix, thus responsible for the improved material properties. Enhanced forces of adhesion led to a compatibilized system as depicted by scanning electron micrographs. Fine dispersion and smooth surface particles were exfoliated and were unidentified under the microscope. The SEBS-g-MA showed improved mechanical strength up to 8% clay content based on tensile tests. Mechanical strength of the nanocomposite was studied as a function of clay content and 90% increase in modulus was observed as compared to the pristine polymer matrix. Thermal decomposition temperatures of the nanocomposite ranged from 365 to 446°C. With increasing clay loading, the nanocomposite exhibited thermal stability greater than pure polymers under similar conditions.

Keywords

Nanocomposites; Mechanical properties; Thermal properties, Exfoliated, Homogeneous dispersion



PROCEEDING Emerging Scientist 2024



Environmentally Friendly Smart PDLC Films Technology

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Presenter

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Nematic liquid crystal, polymer dispersed liquid crystal (PDLC) compounds, and thin films are maintained by using the starting-to-turn emulsification (PIPS) approach and a low birefringent-longitudinal yield. The effect of penta functionality was investigated and compared with both the doped samples and the PDLC flexible thin films. In PDLC manufactured with a 20% weight-per-cent ratio of nematic liquid crystal (NLC), the overall reaction time improves by 80% and the input impedance increases by 62%. When Polyoxy Polypropylene Diamine (POPDA) was utilized as a tacky glue agent hardener, it was discovered that the optical transparency and clarity of the picture in the ON state were noticeably improved. Although V_{th} and V_{sat} improve as the plastic mesh gets smaller, they improve as the polymer mesh continues to shrink, and as toff rises as the copolymer mesh continues to shrink, the off-state penetration increases. Due to the long chains of the merge hardener POPDA and the notable increase in the copolymer length between the two cross-linking agents, the effects on the PDLC materials are more noticeable than those on flexible thin films. But at the same time, consideration should be given to how the various cross-linking agents differ in terms of viscosity, thermal properties and monomer methyl ($-CH_3$) chain length. The use of other window treatments and applications for installations, such as blinds, shades and shutters, that don't provide nearly as excellent a performance and/or convenience as these switchable films, like electronic PDLC smart film, can be significantly reduced. Electric curtains that save energy and are friendly to the environment, switchable projection screens and multi-purpose switch glasses that combine the capabilities of touch IR, full-color LED tubes, projectors and other smart film uses are a few common applications for PDLC films.

Keywords

Electro-optical properties; Penta functional; Epoxy resin; PDLC films; Di-functional; Environment and smart films



PROCEEDING Emerging Scientist 2024



Challenges and Strategies of Design of Multi-Target Drugs for the Treatment of Multifactorial Diseases

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Presenter

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

The drug discovery process has evolved tremendously within the past two decades. In the world of drug development, a single molecular target or mechanism has historically been the most prevalent technique. The single-target drug system was based on the lock and key model proposed by Erlich. According to this concept, only a specific ligand (key) can fit into a particular target (lock). The single-target drug system eliminated the undesired side effects and was considered as more selective. Later on, it was noted that the biological systems are more complex. Single-target drugs were not effective against multifactorial diseases like diabetes, cancer, depression and Alzheimer's disease (AD). In order to meet therapeutic requirements of complex diseases, one strategy to develop such compounds is to combine favorable features of potent ligands of synergistic targets and form a new multi-target designed ligands (MTDLs). Our research group is involved to identify the compounds that have balanced even mild biological activities against multiple macromolecular targets instead of finding one-target compound with high potency. Recently, we have reported SAR studies of our lead compound as antidiabetic agent. Compound 56 exhibited 2.5-fold, 366-fold, 80-fold and 61-fold higher activity compared with Lead compound against DPP-4, PTP-1B, α -amylase and α -glucosidase respectively. Moreover, the diverse nature of Alzheimer's disease provides a rationale for developing a unique drug design strategy focused on multitarget approach. Based on the "one for all" paradigm, we are successful in developing another strategy to develop new frameworks to regulate the cholinergic (AChE / BChE), monoamine oxidase (MAO-A/ MAO-B), self-mediated amyloid β 1-42 peptide aggregation and neuroinflammation (COX-2, 5-LOX) pathways by single molecule in AD related therapeutics. A number of synthesized hybrid molecules possessed excellent simultaneous inhibitory activity against all the tested targets and thus emerged as optimal multipotent hybrid compounds among all the synthesized series of the compounds.

Keywords

Drug design; Multi-target designed ligands; Multifactorial diseases; Particular target; Paradigm



PROCEEDING Emerging Scientist 2024



Development of Crop Traceability and Quality Assurance System using Blockchain and Artificial Intelligence

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Presenter

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Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

The agriculture industry is facing several challenges such as insufficient data, lack of traceability, absence of price optimization systems, and the absence of exports to high-end markets. To address these challenges, this paper proposes the development of a Crop Traceability and Quality Assurance System using Blockchain and Artificial Intelligence (AI). The proposed system utilizes blockchain technology to provide secure, transparent and tamper-proof record-keeping of crop production data. Artificial Intelligence is used to analyse data from the blockchain and other sources to provide insights into crop production, yield, and market trends. The system provides real-time data on crop health, growth rate and yield, which can help farmers optimize their production process and make informed decisions on when to sell their crops. The system also ensures that the crops are authentic, safe and meet regulatory standards by providing information on the origin of the crops, the conditions under which they were grown, and the certifications obtained by the farmers. The proposed system provides accurate price forecasts for crops based on market trends, weather patterns and other relevant data. This information can help farmers make informed decisions on when to sell their crops, and traders can use it to make more accurate price predictions. The system can also facilitate the coordination of the supply chain process, ensuring that the right crops are delivered to the right market at the right time, reducing waste, improving efficiency, and increasing profitability. The blockchain can be used to securely store payment data, ensuring that all parties are paid fairly and promptly.

Keywords

Tracking; Supply chain; QR code; Marketing; Food



A Novel Machine Learning Computational Identification of Growth Hormone Binding Proteins from Sequences using GRU Algorithm

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

A Growth Hormone Binding Protein (GHBP) also known as a soluble carrier protein, is able to effectively and non-covalently communicate with growth hormone. The development of computational approaches is required to properly and effectively identify HBP, while experimental approaches are still challenging and cost-effective. Understanding cell development and biological mechanisms is greatly aided by correctly identifying the GHBP from a particular protein sequence. A large amount of protein sequence data has been collected in the postgenomic age making the development of an integrated computational method that can rapidly and accurately identify potential GHBPs from among a large number of candidate proteins all the more pressing. An accurate and dependable prediction model for HBP detection is desired in order to quantify the efficacy of these interventions. The proposed model is made up of several machine and deep learning techniques and used two features' methods. Using the dipeptide composition (DPC), amino acid composition (AAC), and deviation between the dipeptide and the expected mean (DDE), we first extracted features. The classifier then receives the extracted features for obtained the probability score. In this paper we introduce iGHBP, a revolutionary GHBP predictor tool based on gate recurrent unit (GRU) algorithm. Using a two-step feature selection methodology, we obtained the best feature set for predicting GHBP from a given protein sequence by combining dipeptide composition and amino acid index values. We conducted a 5-Fold cross-validation analysis and found that iGHBP had an accuracy score (0.9580%). We then show that the DPC feature extraction strategy yields higher accuracy scores (0.9580%), precision scores (0.943%) sensitivity score (0.947%) specificity score (0.9397%) and MCC score (0.939%). In comparison to GRU method based on AAC feature engineering achieved better results in terms of accuracy score (0.9592%), we got precision scores (0.991%) sensitivity score (0.9466%) specificity score (0.991%) and MCC score (0.951%) and a ROC (AUC) score of (0.998%). In addition, our new iGHBP technique outperformed the current method in an objective evaluation on a separate data set.

Keywords

GHBP; Deep learning; DPC; ACC; GRU; Human health



PROCEEDING Emerging Scientist 2024



Achieving Ultra Low Latency in Video Telemetry System

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Presenter

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Real-Time video transmission applications, such as video telemetry systems, demand ultra-low-latency to provide timely and responsive visual information. This paper describes the design, implementation and benchmarking of optimized FPGA based video encoding system. The transmitting end of video system consists of multiple video cameras, a controllable video multiplexer; hardware-based video compression unit, digital RF transmitter and RF antennas. The video compression unit system is highly configurable in terms of frame rate, compression ratio and data-rate. Pure HDL code is developed for FPGA based Direct Memory Access (DMA) controller that handles high speed video data during processing to reduce the latency of the system. For the receiving segment, a peli-case based portable system is developed. It comprised of a Software Defined Radio (SDR) based receiver designed and developed to de-modulate the RF signal and send the base-band data to an industrial PC. A highly optimized video de-compression and rendering application is developed and hosted in the industrial PC to view the video in real-time. The end-to-end system is characterized by measuring the total latency for a video rate of 5 Mbps. Furthermore, to guarantee the measured latency for extended operation time, inter-frame jitter is also analyzed. The designed system showcases substantially low latency, enabling it to be used in applications requiring real-time video. There can be potential applications of the developed system in commercial domain such as remote monitoring of patient in which the latency parameter becomes very crucial. Similarly, the system can be used in crop monitoring, disaster management etc. in which latency may not be very crucial but a reliable indigenous configurable system can be utilized.

Keywords

Low-latency; Video transmission; FPGA based DMA; Video compression; SDR; Inter-frame Jitter



PROCEEDING Emerging Scientist 2024



Synthesis and Drug Delivery Efficiency of Buckyball Nanoparticles for Carbazole Based Anti-Cancer Agents

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Presenter

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Buckyball (BB) discovered in 1985 possess special physical and chemical properties which intrigued the scientists from various field to utilize it for the required purposes. The aqueous compatibility of nanoparticles of BB (BBNPs) proved to be quite beneficial and interesting as drug delivery systems. In this work the BBNPs were synthesized by two methods i.e. extended mixing method and ultra sonication method. The later proved to be better method as NPs were smaller in size and easy to produce. Initially the anti-cancer drug DOX was deposited on BBNPs in suspension by sonication and then 24 hrs magnetic stirring. The adsorption of DOX on BBNPs was confirmed by the 88.89% hypochromic in the electronic spectrum of BBNP-DOX complex as compared to that of pristine DOX. Then our synthesized carbazole based drugs were deposited and entrapment efficiency was investigated. The carbazole was N-protected and formylated via Vilsmeier-Haack formylation, then Knoevenagel condensation was performed with anilines. The resulting Schiff base was reacted with mercaptoacetic acid to give thiazolidinone after cyclization. The compounds were characterized by IR, Mass and NMR techniques and their adsorption and desorption was investigated on synthesized BBNPs. The percent entrapment efficiency was found to be 88.13%. Further drug release efficiency was checked at different temperatures and PH value (acidic, basic and neutral), which showed that BBNPs are promising vehicles for targeted anti-cancer drugs.

Keywords

Nanoparticles; Ultrasonication; Anti-cancer; Adsorption; Schiff base



PROCEEDING Emerging Scientist 2024



Perfluoroalkyl Acids: Emerging Pollutants in the Environment

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Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Perfluoroalkyl acids (PFAAs) are categorized as emerging contaminants because the information about their persistence, omnipresence and toxic effects has been available only since the last 15 years due to continuous improvement of liquid chromatography-tandem mass spectrometry that can quantify these persistent organic pollutants in various matrices at trace levels. However, it would be better if another method could crosscheck LC measurements to avoid uncertainties due to background contamination. In the present study, therefore, both Gas Chromatography-Mass Spectrometry (GC-MS) and LC-MS2 methods were developed for the determination of PFAAs in aqueous samples. The GC method was less appealing than the LC method because of higher detection limits, a small range of analytes, and laborious derivatization prior to chromatographic separation. However, both GC-MS and LC-MS2 methods had comparable performance characteristics and therefore, could be used to produce valid results. Continuous monitoring of the aquatic environment is important for controlling and managing the transport of PFAAs and associated risks to human health and the environment. One part of this work, therefore, described the sampling and analysis of water and sediment samples collected from different locations (mainly from the river Saale, and additionally a few samples from the Elbe, PleiBe, WeiBe Elster flowing through Germany and from the river Sosiani of Kenya). Annual discharge of PFAAs from the river Saale into the Elbe was 164 ± 23 or 91 ± 39 kg y⁻¹ when estimated from the analysis of grab samples or the POCIS (Polar Organic Chemical Integrative Sampler) deployed for 20 days, respectively. Perfluorooctanoic acid (PFOA), a potential carcinogen, was the most abundant PFAA found in most of the aqueous samples, whereas the prohibited Perfluorooctane sulfonate (PFOS) was only found in some samples at low concentrations. In sediment samples from the River Saale, most of short-chain PFAAs ($\leq C_6$) were observed near/below their respective detection limits and therefore could not be quantified. Total loads of sediments were in the range 1.9-4.2 ng g⁻¹, dominated by the long-chain PFAAs and the most abundant PFAA in sediment samples was Perfluorododecanoic acid (PFDoDA).

Keywords

Perfluoroalkyl substances; Emerging pollutants; GC-MS; LC-MS/MS; Sorption in sediments



PROCEEDING Emerging Scientist 2024



Gravitational Decoupled Anisotropic Strange Stars

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

The non-linear structure of the field equations makes it difficult to formulate interior solutions for self-gravitating systems. In this regard, it is convenient to derive exact and physically acceptable solutions for stellar configurations using the gravitational decoupling approach. The goal of this work is to develop the charged anisotropic spherically symmetric strange star model by constructing an exact solution of the field equations through the decoupling approach. In order to achieve this, an additional source is introduced via coupling parameter to the energy- momentum tensor of charged isotropic fluid and the corresponding field equations are evaluated. The geometric deformation is employed in radial metric function only which leads to the decoupling of field equations into two systems: One corresponds to the charged perfect fluid (Einstein-Maxwell system) while the other one is associated with the additional source (quasi- Einstein system). To proceed further, a known solution for isotropic spherical matter distribution with MIT bag equation of state including electromagnetic field is considered. This solution is generalized into anisotropic domain by finding the solution of quasi-Einstein system. In order to find the decoupler function, the condition that charged isotropic fluid configuration as well as an additional source has the same complexity factor is used which leads to the expressions of all physical parameters. The first and second fundamental forms of matching conditions are used to determine the values of unknown constants present in the obtained solution. To analyze the physical feasibility of the constructed model, some particular strange star candidates are taken into account. For these candidates, it is found that the metric functions and physical parameters such as density, pressure and anisotropy parameter are well-behaved and the constructed model is stable. The energy conditions are satisfied which ensures the presence of realistic matter. Thus, our constructed model is significant as it depicts physically viable behavior to describe the anisotropic strange stars.

Keywords

Exact solutions of the field equations; Anisotropy; Gravitational decoupling; Stellar structure



PROCEEDING Emerging Scientist 2024



Design, Analysis and Fabrication of Pelton Wheel Turbine with Reengineered Blades and Auxiliary Attachments

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Type

Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

In Hydro-Power plants, Pelton wheel turbines are mostly used. The Pelton wheel consists of a large wheel on which several spoon-shaped buckets are spaced uniformly round in its periphery. From the pressure nozzle water is discharged at atmospheric pressure which derives the wheel. Whereas the bucket consists of a central splitter on which the jet strike and get distributed equally to both sides and follows the laminar path. In actual phenomenon fluid distribution on both sides is not uniform which may imbalance the wheel and bucket. Furthermore, the water coming out from the side of the blades, has a sufficient amount of energy which gets wasted from the tail race of the turbine. This may further decrease the efficiency of the impulse turbine. So, this work is purely intended to enhance the power output of the Pelton wheel turbine with the modification in the blade design and additional rows of the auxiliary blade's attachment, which eventually increases the efficiency of the Pelton wheel turbine. Modified blade design consists of a special partial bucket nozzle which provides a converging passage after splitting from the central splitter. Thus, it provides a regular path to the splitting fluid which gets spotted after striking the bucket's central splitter. The auxiliary wheel consists of a set of buckets which are mounted on the same turbine wheel. In such a manner that the jet of water which is coming out of the central wheel bucket gets stroked on the side bucket, making the auxiliary wheel rotate. In this optimized design we may take advantage of both impulse and reaction phenomena simultaneously. The turbine will absorb maximum power and 15-20% expected total power will be produced by this optimized turbine design. Results will be compared numerically with the conventional Pelton wheel turbine.

Keywords

Energy crisis; Demand and supply Gap; Pelton wheel turbine; Loss of energy; Conventional design



PROCEEDING Emerging Scientist 2024



Adsorption of Antibiotic from Pharmaceutical Wastewater by using Chitosan-based Hydrogel

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Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Environmental contaminants are hazardous to living organisms and human societies, which has intrigued the interest of environmental researchers. Ciprofloxacin contamination has become a major concern due to its negative health effects and the emergence of antimicrobial resistance genes. This study examined the removal of pharmaceutical contaminants such as ciprofloxacin by using chitosan-based hydrogel. Additionally, modified hydrogel shows better results 99% as compared to unmodified hydrogel. Ciprofloxacin from pharmaceutical wastewater was effectively removed by using chitosan-based hydrogel. Initial concentration, pH, temperature and contact time had a great influence on the removal of ciprofloxacin. The chemical and physical characteristics and structural morphology of synthesized hydrogel films were studied by using SEM, FTIR and XRD analysis. The maximum removal efficiency was attained at a concentration of 40 mg L^{-1} with $\text{pH}=8$ and an adsorbent dose of 0.05 g as well as at an optimal temperature of 25 and 99.5% in 120 min . Furthermore, the maximum removal efficiency of 95% for ciprofloxacin using chitosan-based hydrogel film was achieved with an initial concentration of 20 mg L^{-1} and an adsorbent dose of 0.05 g with an optimum temperature of 25°C in 60 min . The pseudo-second-order ($R^2 = 1$) and Langmuir ($R^2 = 0.999$) models provide the best-fitted model for ciprofloxacin adsorption isotherm analysis. According to the Langmuir isotherm model, the chitosan-based hydrogel maximum monolayer adsorption capacity was 637.3 mg g^{-1} . These findings imply that chemisorption was primarily responsible for ciprofloxacin adsorption. Ultimately, the chitosan-based hydrogel is an efficient, recyclable and low-cost adsorbent for removing antibiotics (ciprofloxacin) from pharmaceutical wastewater.

Keywords

Wastewater; Hydrogel; Heavy metals; Environmental pollutants



Bioactive Waterborne Polyurethane Emulsions with Promising Antimicrobial Activity as Functional Biocolloids: A Sustainable Approach in Technical and Medical Textiles

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Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

To prepare sustainable, eco-friendly bioactive Waterborne Polyurethane Emulsions (WPUEs) for cellulosic and poly-cellulosic textiles; Isophorone diisocyanate (IPDI) was reacted with polyethylene glycol (PEG) and dimethylolpropionic acid (DMPA) to prepare a pre-polymer and the pre-polymer was further extended with chitosan (CH) and curcumin (CR) to introduce antibacterial properties in the synthesized WPUEs. Various formulations of WPUEs with varying concentrations of DMPA were synthesized and assessed to address the emulsion stability. The synthesized bioactive WPUEs were stabilized due to internal emulsifying colloidal particles that prevent coalescence of the disperse phase at slightly acidic to neutral pH. The molecular weight evaluation of PU colloidal particles after extended with varying concentrations of CH and CR, Gel Permeation Chromatography (GPC) evidently shown the gradual increase in the molecular weight of WPUEs. Structural elucidation of CH-CR-WPUEs was done via FTIR spectroscopy that confirmed the presence of native molecules (CH and CR) in the polyurethane backbone. The physical, chemical, film formation and thermal properties of WPUE's were assessed via DSC, GPC and XRD. Two different varieties of plain weaved cellulosic and poly/cellulosic textiles (dyed and printed) were treated with the series of prepared finishes by pad-dry-cure procedure and studied by means of FTIR, SEM, TGA, zeta potential analyzer, hydrolysis repellences and antimicrobial activity. The antimicrobial performances of the untreated and WPUEs treated and after various washing cycles have been measured qualitatively and quantitatively against *Staphylococcus aureus* and *Escherichia coli* bacterial strains. Results have shown that chitosan and curcumin extensively improved the antimicrobial performance of WPU emulsions and the WPUE treated textiles retain hydrolysis repellences and antimicrobial activity even after several laundry washing cycles. Newly synthesized WPUE bio colloidal finishes are environment friendly along with antibacterial potential with relevance to cellulosic and poly/cellulosic textiles. Primarily, this research work proved a platform for a greener approach to encountering textile diligence.

Keywords

Waterborne polyurethane emulsions; Antimicrobial; Biocolloids; Biomolecules



PROCEEDING Emerging Scientist 2024



Prospects of Electric Vehicles through the Lens of Common People: A Case Study of Lahore

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Physical Sciences &
Engineering

Location

Room 4

Abstract

This study aims to investigate the prospects of electric vehicles (EVs) in Lahore, Pakistan and highlights the technical, regulatory, and social challenges that need to be addressed before these technologies can become mainstream in Pakistan. The research methodology involved the development of a questionnaire, which was filled out by 600 respondents. The data collected was analyzed using descriptive analysis, correlation, and multiple linear regression techniques. The research found that that the 93% of respondents had awareness about electric vehicles and the main factors that influence buying them are their environmental friendliness and less dependency on fuel. However, the main factors discouraging the marketing of electric vehicles were higher capital costs (44%), insufficient charging stations (35%) and long charging time (15%). The research suggests that the government should provide incentives and subsidies to make electric vehicles more affordable for the public and that the current policies are not sufficient. Based on the findings, the study recommends that policymakers and industry stakeholders should focus on increasing awareness about the benefits of EVs, addressing concerns about cost and charging infrastructure, and promoting incentives for early adopters. The study also suggests that further research should be conducted to understand the potential impact of EVs on the transportation system in Lahore, Pakistan.

Keywords

Electric Vehicles (EVs); Prospects; Technical challenges; Regulatory challenges; Social challenges; Awareness; Adoption; Lack of charging infrastructure; Urban mobility



Synthesis of Magnetic Ag/GO-Fe₃O₄ Nanocomposite for Solid Phase Extraction of Tetracyclines

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Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Antibiotics are frequently used as growth boosters in animal husbandry. Tetracyclines (TCNs) are among the antibiotics utilized largely compared to other antibiotics. The foodstuff obtained from these animals contains residues of TCNs which cause acute complications for human health such as allergic reactions, gastrointestinal problems, inhibition of bone, tooth mineralization, headache and liver damage. Thus, monitoring of tetracyclines is paramount, especially in the feedstuff. In the present study, an unprecedented *Azadirachta indica* assisted magnetic Ag/GO-Fe₃O₄ nanocomposite was synthesized and used for the residual extraction of chlortetracycline (CTC) and oxytetracycline (OTC) in the milk samples in an expectation that this bio-based Ag/GO-Fe₃O₄ nanocomposite will provide more adsorption capacity towards oxytetracycline and chlortetracycline due to increased porosity, surface to volume ratio and interaction sites. The interaction between Ag/GO-Fe₃O₄ nanocomposite and tetracyclines can be π - π interaction, hydrogen bonding, electrostatic interaction and π -cation interactions. The Ag/GO-Fe₃O₄ was synthesized by using *Azadirachta indica* leaves extract and was characterized by X-Ray Diffraction (XRD), Scanning Electron Microscope (SEM), FTIR and vibrating sample magnetometer (VSM) analysis. After magnetic solid phase extraction (MSPE) of OTC and CTC, quantification was carried out by HPLC-UV. The OTC and CTC showed an intense absorption band in a range of 250-300 nm in neutral and acidic conditions due to the presence of chromophore groups such as C=O and -OH etc. Statistical analysis was done by measuring the limit of detection (LOD), the limit of quantification (LOQ), correlation coefficient, intraday and inter-day precision. Different factors that affected the adsorption capacity of the adsorbent were studied like pH, temperature, amount of nanocomposite and time. The inter-day and intra-day precision were calculated for oxytetracycline (4 and 6%) and chlortetracycline (3 and 4%) respectively. The limit of detection and quantification for oxytetracycline was 0.5 and 1.5 $\mu\text{g L}^{-1}$ and for chlortetracycline was 0.2 and 0.6 $\mu\text{g L}^{-1}$, respectively and percentage extraction was 94-96%.

Keywords

Magnetic solid-phase extraction; Green synthesis; magnetic Ag/GO-Fe₃O₄; Tetracyclines; HPLC-UV



A Comparative Study on the Joint Hardness and Tensile Properties of Dissimilar Aluminium Alloy using Tungsten Inert Gas (TIG) Welding

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Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

This study is dedicated to the meticulous analysis of hardness in the weld zone (WZ) and the heat-affected zone (HAZ) of dissimilar joints, with a specific emphasis on comparing the ramifications of single pass and double pass welding techniques. Its overarching objective is to provide profound insights into the repercussions of these welding methods on the hardness and tensile properties of the weld joints. The intriguing revelations that emerged from this thorough investigation disclosed that the double pass welding technique exerted a distinctive reinforcing effect, culminating in significantly heightened hardness within the weld zone as opposed to the single pass technique. This variance in hardness can be ascribed to rapid and often abrupt heating and cooling cycle that characterizes single pass welding, leading to markedly lower hardness values in the WZ. In contrast, the incorporation of an additional pass in double pass technique instigated a reinforcing effect, which significantly elevated the hardness. This reinforcing action of the filler wire, integral to the double pass welding process, was essentially linked to its capacity to promote superior mixing and homogenization of the filler material with the base metal. This, in turn, facilitated the formation of a more robust and robust bond, consequently enhancing the overall hardness of the weld zone. The single pass HAZ exhibited a degree of variability in its hardness values, increasing as the distance from centreline expanded. This phenomenon is primarily attributed to the varying levels of thermal exposure experienced by different regions within the HAZ. In contrast, the double pass HAZ, having been subjected to two successive cycles of concentrated heat, underwent a more profound and extensive thermal exposure. Furthermore, the research involved a comprehensive comparison between the tensile properties of single and double pass welding joints. This rigorous examination was aimed at assessing variations in Ultimate Tensile Strength (UTS) and Yield Strength (YS). The incorporation of a greater amount of filler material, which served as a reinforcement agent, was found to have a pronounced impact on the ultimate tensile strength and yield strength, leading to improvements of 20 and 15%, respectively. The findings also underscore the fact that the double pass weld displayed more significant changes in both hardness and tensile strength. It can be largely attributed to superior homogenization of filler material and induction of precipitation hardening within the joining area. This dual mechanism is a testament to multifaceted nature of the double pass welding technique and its ability to induce transformative changes in mechanical properties of weld joints.

Keywords

Aluminium alloys; Mechanical properties; TIG welding; Heat affected zones



Detection of Fetal Femur, Abdomen and Head Circumference from Ultrasound Images for Measurement of Length and Gestational Age

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Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

In this study fetal femur, head and abdomen are detected from ultrasound images using various machine learning classification models AlexNet, Sononet and Naïve Model and results are compared for suggesting proper fetal femur biometry for development of an automated system. This experimentation has enabled us to detect, generate and record a video where femur, head and abdomen is detected from images. However currently there are lots of challenges for radiologist, sonographers, gynecologist and radiologist. However, it is time consuming for medical practitioners in identifying accurately the fetal femur length, size, growth and gestational age from ultrasound images. This study shows that during pregnancy it is difficult and time-consuming job to calculate and measure fetal growth and other health parameters accurately, however there are several ways to detect fetal femur length of human body but there are very few and rarely techniques reported to detect fetal femur, head and abdomen from ultrasound images. This study further discusses that detection of femur, head and abdomen from fetal ultrasound images may be helpful and used for further development of the fetal femur biometry system. However, it is proposed and attempted to detect fetal femur, abdomen, head and design step by step methodology to perform experimentation using ultrasound images. Classification model results clearly describe that femur, head and abdomen is detected analysis is carried out which shows that classification models have performed well and detected desired parameters from fetal ultrasound image. It is also discussed how to accurately detect fetal head, femur and abdomen from ultrasound images. This detection may be helpful and suggest practitioners that how to develop a system for fetal femur biometry. However, classification models re used for fetal femur, head and abdomen detection it has produced outcome that femur, head and abdomen are existing in image. Results can be helpful for data labeling and segmentation process. This study be used for development of an automated system for fetal femur biometry using videos and ultrasound images for accurate measurements. This study may ultimately contribute in the existing body of knowledge theoretically, methodology and help sonologist, radiologist, doctors and medical practitioners to determine the gestational age, growth and health of fetus.

Keywords

Machine learning models; Classification models; Detection techniques; Fetal femur; Fetal head; Fetal abdomen



Synthesis and Characterization of Sulfur-Based Polymers from Coal through Inverse Vulcanization; A Novel Path to Foster Green Chemistry

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Oral Presentation

Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

Fossil fuels, including coal, oil, and natural gas, persist as the major sources addressing the world's increasing energy requirements. Coal combustion has played a substantial role in releasing an array of toxic substances into the environment. Notably, sulfur emissions have emerged as a primary contributor to acid rain formation. In recent times, there has been a noticeable shift towards more effective pollution control strategies in energy production, prompted by increasing environmental concerns. It is a well-established fact that various sulfur forms, including pyritic, organic, sulphate, and elemental sulfur, contribute to the release of Sulfur Dioxide (SO₂) when coal is burned. To mitigate this issue and promote cleaner energy production, coal desulfurization techniques have become indispensable. The core of this study centers on coal desulfurization, with specific emphasis on high-sulfur lignite from Sindh. The process involves the use of cyclohexane and ethanol as solvents in a soxhlet extraction equipment. Results from carbon-sulfur analysis reveal that around 70% of the elemental sulfur in coal can be efficiently recovered using cyclohexane, while ethanol provides a slightly lower but still significant recovery rate of 55%. Throughout the study, comprehensive analyses, including calorific value, approximate, and final analyses, were conducted on coal samples both before and after treatment. Cutting-edge analytical and measurement techniques, such as Gas Chromatography and Mass Spectrometry (GCMS), were employed to confirm the presence of elemental sulfur. Furthermore, the study investigates the impact of time on the quantity of extracted elemental sulfur while maintaining a consistent amount of coal and solvent. This temporal dimension contributes a critical aspect to the study, shedding light on the kinetics of the desulfurization process. The latter part of the research shifts its focus to the synthesis of sulfur-based polymeric composites. This innovative process involves ring opening polymerization through inverse vulcanization, using materials such as High-Density Polyethylene (HDPE), Polypropylene (PP), Polycarbonate (PC), and their combinations. The resulting polymer materials underwent comprehensive mechanical characterization, including two-point bend tests, impact factor analysis, and tensile strength measurements. Additionally, thermogravimetric analysis (TGA), differential scanning calorimetry (DSC), and Fourier-transform infrared spectroscopy (FTIR) were utilized to further elucidate the properties and performance of these newly synthesized sulfur-based polymeric composites. This comprehensive approach contributes to a deeper understanding of the potential applications and properties of these materials in various industrial and environmental contexts.

Keywords

Lignite coal; Soxhlet extraction; Inverse vulcanization; TGA; FTIR



PROCEEDING Emerging Scientist 2024



Specific Emitter Identification in IoT Environment using Artificial Intelligence

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Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

The proliferation of wireless devices has led to increasingly complex wireless environments, with radio frequency interference presenting regulatory and security challenges. Specific Emitter Identification (SEI) is essential for authenticating wireless devices, and transient signals analysis offers unique transmitter-specific features for this purpose. In the context of IoT and 5G, authentication encounters hurdles such as regulatory and security challenges, the critical role of SEI, transient signal potential and dynamic signal conditions. To address these challenges, we propose a solution that involves the collection of a diverse dataset from 50 wireless devices, each sampled 1500 times in controlled lab settings, simulating various operating conditions. The dataset encompasses different device types, frequencies and power levels, providing a comprehensive representation of real-world scenarios. Model building is performed using conventional classifiers and deep neural networks. Among conventional classifiers, XGBoost demonstrates the best classification performance. In the deep neural networks class, CNN-BiGRU outperforms other architectures, integrating a 1D CNN followed by bi-directional GRU, along with dropout mechanisms to prevent overfitting. Experiments conducted at different Signal-to-Noise Ratios (SNRs) reveal high classification accuracy, particularly at 30dB, where CNN and CNN-BiGRU achieve nearly 100% accuracy. Even at low SNR (10dB), CNN-BiGRU accurately identifies wireless devices with 99.17% accuracy and an f1-score of 99.43%. Future efforts involve deploying the model in real-world scenarios, specifically in trials focused on identifying satellite ground stations operating on the Paksat-1R communication satellite. Encouraging results have been obtained during these experiments. The forthcoming work aims to establish an RF fingerprint database comprising all registered terminals to facilitate the identification of unauthorized carriers utilizing satellite bandwidth. The successful outcomes in the satellite environment underscore the practical applications of this approach in satellite communication, encompassing authentication, resource assignment, and the mitigation of unauthorized bandwidth use. Furthermore, deploying the model in authentic environments for device authentication, coupled with the inclusion of a more diverse array of devices, will enhance our ability to assess the models classification performance accurately.

Keywords

Specific emitter identification; IoT; Artificial intelligence; RF Fingerprinting



Comparative Study of Treatment for Tannery Wastewater by Phycoremediation and Oxidation Process

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Track

Physical Sciences &
Engineering

Location

Room 4

Abstract

The tanning industry is awfully a capitalism that comes up with the development of many countries. Asia is the main assembler of tannery industry. Effluvia that comes from leather manufacturing have excessive congregation of heavy metals explicitly with high inorganic nutrients and organic matter. Tannery processes create adulterate due to the discharge of toxicant in the environment. Many potential species are promising, eco-friendly, and sustainable option for tertiary wastewater treatment with a possible advantage of improving the economics of microalgae cultivation. The process assesses the outcome of microalgae *Scenedesmus* for bioremediation of chromium in Tannery wastewater. The present study deals with the phycoremediation of tannery wastewater (TWW) using *Scenedesmus* isolated from a local habitat. In addition, another technique i.e., advance oxidation process (AOP) was also applied for treatment. The physicochemical parameters and heavy metal analysis were performed including BOD, TS, TDS, TIDS, TVSS, chromium and chloride etc. The highest BOD removal was 99.8%, COD removal was 99.8% and chlorides were 96.1% removed. The highest removal of Cr was 98.6% by AOP. The phycoremediation by *Scenedesmus* gave the highest removal of 99.1% of chromium. The removal of chromium was more in advance oxidation process than bioremediation. The adaptability and the tolerance of *Scenedesmus* not to be affected by the harsh environments and ability to detoxify heavy metals in wastewater are significant and the comparative treatment using AOP proved to be remarkable. Compared to other microbial bio sorbents, these algae exhibit significant biomass production. Chromium is primarily found in the wastewater of tanneries, and *Scenedesmus* sp. was able to eliminate 80-90% of the chromium content. The results showed that the process was effective for the removal of chromium in wastewater. Furthermore, the wastewater generated during wet-blue tanning process can support dense population of *Scenedesmus* making it a potential growth medium for biomass production for phycoremediation of toxicants in tannery wastewaters. Both techniques proved to be effective in Cr removal, they have their own pros and cons. The AOP gave better results than phycoremediation but its energy dependent on the other hand use of algae is cost effective.

Keywords

Bioremediation; Microalgae; Advanced oxidation process; Tannery waste water



PROCEEDING Emerging Scientist 2024



***In silico* Designing of Carbazole Based Propargylamine as Anti COVID-19 Drugs**

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Poster Presentation

Track

Physical Sciences &
Engineering

Location

Room 5

Abstract

Coronavirus which emerged for the first time in Wuhan China in 2019 and it was spread so quickly that it became a pandemic. In that pandemic two major crises were of health and economy. All over the world billions of deaths occurred. Hospitals were under high stress. Coronavirus is changing shapes day by day so there is need to develop more antiviral against it which are economical and easy to synthesize. So, that population of all over the world can easily access them. Efforts were done to *in silico* study of three class of compounds which are easy to synthesize. Propargylamines of Series 1 are divided into three categories: Category A (102A-107A), category B (108B-116B) and category C (117C-119C). Carbazolyl thiazolidinone of series 2 and belong to category D (120D-135D). Quinolines of series 3 and belong to category E (136E-147E). *In silico* studies were done using AutoDock and AutoDock Vina. Visualizations were using Discovery Studio. Physicochemical properties and ADMET properties were checked using SwissADME and admetSAR 2.0. Compounds of all classes show suitable physicochemical and ADMET properties. By *in silico* studies following top five ligands were filtered out based on docking studied: 107A = -9.6 Kcal mol⁻¹, 108B, 109B, 116B = -9.0 Kcal mol⁻¹, 102A and 106A = -8.8 Kcal mol⁻¹, 105A and 112B = -8.6 Kcal mol⁻¹, 121D and 123D = -8.6 Kcal mol⁻¹ and 126D = -8.5 Kcal mol⁻¹. Out of these, three ligands were screened by analyzing type of interaction with HIS 41 and CYS 145 which are catalytic dyad residues. Compounds like 107A, 116B and 112B make π -sulphur and π -cation/anion interactions with CYS 145 and HIS 41. In summary out of these three classes of compounds propargylamines are promising candidates to be further investigated as anti-COVID-19 agents compare to carbazolyl thiazolidinone and quinolines, based on computational studies.

Keywords

In silico; Carbazole; Propargylamines; COVID-19; Main protease



PROCEEDING Emerging Scientist 2024



Design and Fabrication of Co-Flow Jet to Control Boundary Layer Separation

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Poster Presentation

Track

Physical Sciences &
Engineering

Location

Room 5

Abstract

The research, entitled "Design and Fabrication of Co-Flow Jet to Control Separation," embarks on an exploratory journey into the pioneering realm of a Dual Co Flow Jet airfoil. This novel design ingeniously integrates contiguous suction and blowing mechanisms along the airfoils surface. The primary aim is to substantially augment aerodynamic performance, orchestrating refined control over the boundary layer. This strategic manipulation amplifies lift, substantially diminishes drag, and remarkably expands the operational envelope of the airfoil. The designs crux lies in its avant-garde approach to facilitate a smooth transition from a suction region, pivotal in stabilizing the boundary layer and retarding flow separation, to a subsequent blowing region. This region is instrumental in re-energizing and reinvigorating the airflow, effectively forestalling any further separation. Utilizing the sophisticated methodology of Computational Fluid Dynamics (CFD) simulations, our study meticulously dissects and analyzes the airfoils aerodynamic characteristics under a kaleidoscope of flow conditions and varying angles of attack. The research delves deeply into the designs impact on lift-to-drag ratios, stall characteristics, and the overarching efficiency of the system, while judiciously considering the energy requirements essential for maintaining the dual jet mechanism. Wind tunnel experiments, conducted with rigorous precision, serve as a complement to the computational analysis, offering empirical validation and substantiation of the theoretical predictions. The findings and conclusions drawn from this extensive research offer a cornucopia of promising insights into the domain of cutting-edge airfoil design. These insights foreshadow the potential for substantial advancements in aircraft performance, including marked improvements in maneuverability, control, and operational versatility. However, the study does not shy away from highlighting the inherent challenges posed by the systems complexity, the quest for energy efficiency, and the potential issues surrounding noise and vibration. These considerations are paramount, as they lay a robust foundation for continuous innovation and future exploration in this dynamic and ever-evolving field of aerodynamics.

Keywords

Co-Flow Jet; Active flow control; Suction; Blowing; Airfoil design



PROCEEDING Emerging Scientist 2024



Role of Bias Correction in Pakistan's Hydrological Impact Study

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Track

Physical Sciences &
Engineering

Location

Room 5

Abstract

In the intricate and dynamic field of hydrologic impact assessment, the precise and trustworthy portrayal of meteorological variables plays a crucial role, one that cannot be overstated. This study delves into the sophisticated world of downscaling techniques, a vital process that acts as a critical bridge, connecting the vast domain of coarse-scale global climate models with the detailed and complex landscape of localized hydrological systems. At this pivotal juncture lies the essence of our research—a thorough exploration of bias correction methods. Bias correction methods, reminiscent of the meticulous work of skilled artisans, are employed to meticulously reshape and refine raw data, effectively rectifying inherent biases and disparities. This process is particularly significant in the context of Pakistan, a country that is acutely susceptible to the impacts of climate change and variability. In such a setting, the execution of hydrologic impact studies becomes not just relevant but essential. These studies are instrumental in evaluating potential risks and formulating effective adaptation and mitigation strategies to address them. The precision and reliability of these hydrologic impact studies are fundamentally dependent on the quality of the meteorological data utilized. Thus, the application of bias correction methods becomes a critical component of the research methodology. This article embarks on a profound journey of scientific exploration, aiming to uncover the subtleties and intricacies of bias correction techniques employed in the downscaling of meteorological variables for hydrologic impact studies. It is dedicated to enhancing our understanding of the hydrological impacts within the diverse terrain of Pakistan. Through a comprehensive examination of the strengths and weaknesses of these bias correction methods, we aim to acquire valuable insights into their overall effectiveness. This will enable us to identify the most suitable approach for future hydrological studies in the region. A deeper understanding of the influence of bias correction methods on hydrologic modelling is pivotal. It contributes significantly to the development of improved water resource management strategies, bolsters preparedness for extreme weather events, and advances climate change adaptation efforts within Pakistan.

Keywords

Hydrology; Downscaling; Bias correction; Climate change; Meteorology; Water Resource Management



PROCEEDING Emerging Scientist 2024



Groundwater Extraction Impacts on Quality and Quantity and Seawater Intrusion in Karachi Pakistan

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Type

Poster Presentation

Track

Physical Sciences &
Engineering

Location

Room 5

Abstract

The study was located within arid climate zone; it receives low precipitation because neither the area is situated in the main zone of the monsoon nor the structure of the area favours orographic rainfall. The drainage system consists of many second to third order streams, sub-parallel and flow generally in southwest direction, in the metropolitan areas of Karachi. The groundwater sample were collected 2022 and analysed for quality and quantity from the Karachi from the same areas where study was done and published in 2003. The physical (TDS, pH, EC SAR) and chemical (Na, K, Ca Mg, Cl, HCO₃, SO₄) parameters were analysed of groundwater for domestic purposes and for water table. It is concluded from the study that 630 MGD calculated on population base from 1961 to 1998 (Population 15 million), shortage increase 472.2 MGD from 2005 to 2020 population increase 27million). Peoples of Karachi are using ground water, RO water for drinking purposes whereas Ro water is also based on groundwater. While 472.2 MGD to 1300.3 MGD shortage of water will be increase in 2025 (population 32 million), water quality will be more brackish and water table will be further down in future from 400 to 1000 feet. Lower areas of Karachi may be sea water intrusion due to over withdrawal from ground water.

Keywords

Groundwater; Quality; Water table; Sea water intrusion



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Integrating BIM and IoT for Sustainable Building through a Digital Twin Framework with Intelligent Daylight Automation

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Poster Presentation

Track

Physical Sciences &
Engineering

Location

Room 5

Abstract

Energy demand is one of the biggest problems in the current world as energy utilization is increasing rapidly with the increase in population. Pakistan, being a developing country, is severely affected by this problem. Hence, to save artificially generated energy it is necessary to utilize natural energy more efficiently. Previous literature suggests that automation is important to create a sustainable environment and is quite beneficial for people. This project aims to identify the potential of optimization of natural sunlight to reduce reliance on artificial light. Currently, the project is end route to accomplishing the target, by preparing Raspberry Pi and installation of light sensors in defined places. The team members here are working on the development of a 3D model of the NUTECH academic block, considering an 8-story building as the main focus of the project by employing BIM (Building Information Modeling) technology. The IoT (Internet of Things) and BIM used in our project have proven to be efficient techniques in terms of cost and time. Using Python programming, data will be sent to a local CSV file and Google sheet. The Revit BIM model will then be updated followed by automation achieved by Raspberry Pi; commands will be given to the actuator to move louvers at angles until the required demand is achieved. The outcome of this project will provide a baseline for a cost break-even and energy-efficient building model. Furthermore, this project can be used worldwide for the optimization of building performance by the use of a fully functional BIM plugin.

Keywords

Sustainability; Building Automation; BIM; Iots; Cost Effective Strategies

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