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01 Conference Track

- **Medical Sciences**
- **Pharmacology & Toxicology**

Session Chairs:



Prof. Dr. Zabta Khan Shinwari
Vice President, The ACSE | Dubai



Prof. Dr. Mona M. El-Husseiny
Professor of Physiology, Cairo University, Egypt



Muhammad Sarwar
Secretary, The ACSE



Biomarkers as Valuable Tools in Clinical Diagnostics

Presenter

Prof. Kaiser Jamil

Kaiser Jamil, Nasreen Begum and G. Satyanarayan Raju

Head of Genetics Department, Bhagwan Mahavir Medical Research Centre, India

Type

Keynote Lecture

Abstract

One of the most common cancers among females is breast cancer, and the general causes are attributed to mutations in the breast cancer susceptibility genes, BRCA1 and BRCA2, and, to some extent, tumor suppressor genes such as CHEK2, TP53 and ATM, genes which account for about 25% of breast tumors or is driven by epigenetic alterations. Epigenetic alterations plays an important role in breast cancer, our aim was to create a methylation-based biomarker for breast cancer detection. We selected the ATM gene. For this study as it is an important tumor suppressor gene and plays an important role in DNA repair, cell cycle regulation, and apoptosis mechanisms. DNA was isolated from 30 cancer patients, with IEC approval and informed consent, tumor and adjacent non tumor biopsy tissues were collected. Sodium bisulfite conversion and methylation-specific PCR (MS-PCR) were performed using MS-PCR primers of ATM promoter region to analyze promoter methylation of this gene and correlated these findings with patient's demographics. ATM promoter methylation was positively associated with age ($p = 0.01$), tumor size ($p=0.045$) and advanced stage of the disease i.e. stage III and IV ($p =0.019$). A significant association was found between the lower expression of ATM mRNA and patient's age ($p=0.009$). Association between promoter hypermethylation and lower expression of ATM mRNA was also found ($p=0.035$). Statistical analysis showed a significant association between ATM promoter methylation in patients aged below 50 years. So, we anticipate that chance of disease-free survival of young breast cancer patients may increase using this biomarker for cancer detection and therapeutic targets.

Track

Medical Sciences

Keywords

Breast cancer; Mutations; BRCA1; BRCA2; Cancer detection; Epigenetic alterations



Evaluation of Nitric Oxide Donor L-arginine and Ciprofloxacin against Typhoid

Presenter

Dr. Syed Shahzadul Haque

Syed Shahzadul Haque

Indira Gandhi Institute of Medical Sciences, India

Type

Oral Presentation

Abstract

Typhoid caused by *Salmonella typhi* remains a major health concern worldwide. Human typhoid is similar to the infection caused by *Salmonella typhimurium* in mice. Most of the antibiotics are resistant and vaccines have less than desired efficacy and certain unacceptable side effects, making it pertinent to the search for a new suitable formulation. Nitric oxide (NO) is a gaseous free radical molecule; produced in biological systems. During the enzymatic conversion of L-arginine to L-citrulline by NO synthase (NOS) nitric oxide is produced. Ciprofloxacin one such fluoroquinolone has been shown to achieve high intracellular concentrations and the least resistant antibiotic used against typhoid. Exogenous administration of L-arginine results in increased NO production, indicating that endogenous substrate is insufficient for maximal NO production. By considering these facts, it was thought to see the effect of oral administration of NO donor i.e. L-arginine along with the low doses of an antibiotic (ciprofloxacin). NO estimation was done by the fluorometric method (detection limit in nM range). Hepatic nitrite level in mice infected with 0.6xLD50 of *S. typhimurium* was 8.33%, higher than control animals (treated with saline) at day 8, and in different groups B+Arg, B+Cip & B+1/2Arg+1/2Cip were 16.66%, and 12.5% & 10.25% respectively as compared to only *S. typhimurium* infected mice. Formulation of low doses of L-arginine and ciprofloxacin shows better therapeutic induction against typhoid so that it can use for future treatment. This increase of nitrite level (metabolites of nitric oxide) is may be due to enhanced pro-inflammatory IFN- γ , TNF- α cytokine expression.

Track

Medical Sciences

Keywords

Typhoid, Nitric oxide, *Salmonella typhimurium*, ciprofloxacin



Growth Hormone Induces Mitotic Catastrophe of Podocytes and Implicates in Proteinuria

Presenter

Dr. Anil Kumar
Pasupulati

Anil Kumar Pasupulati, Rajkishor Nishad, Dhanunjay Mukhi and Sumathi Raviraj

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Type

Oral Presentation

Abstract

Podocytes are integral members of the filtration barrier in the kidney and are crucial for glomerular permselectivity. Podocytes are highly differentiated and vulnerable to an array of noxious stimuli during various clinical conditions whereas podocyte loss plays a key role in progressive glomerular diseases. Elevated circulating growth hormone (GH) levels are associated with podocyte injury and proteinuria in diabetics. Previous studies have shown that podocytes express GH receptors (GHR), and induce Notch signaling when exposed to GH. However, the precise mechanism(s) by which excess GH elicits podocytopathy remains to be elucidated. In the present study, we demonstrate that GH induces cognate TGF- β 1 signaling and provokes cell cycle re-entry of otherwise quiescent podocytes. Though, differentiated podocytes re-enter the cell cycle in response to GH and TGF- β 1 unable to accomplish cytokinesis, despite nuclear division. Owing to these aberrant cell-cycle events significant amount of GH or TGF- β 1 treated cells remain binucleated and undergo mitotic catastrophe. Importantly, inhibition of GHR, TGFBR1, or Notch signaling prevented cell cycle re-entry and protects podocytes from cell death. Furthermore, inhibition of Notch activation prevents GH-dependent podocyte injury and proteinuria. Kidney biopsy sections from patients with diabetic nephropathy show activation of Notch signaling and bi-nucleated podocytes. All these data confirm that excess GH induces Notch1 signaling via TGF- β 1 and contributes to the mitotic catastrophe of podocytes. This study highlights the role of aberrant GH signaling in podocytopathy and the potential application of inhibitors of TGF- β 1 or Notch inhibitors as a therapeutic agent for diabetic nephropathy.

Track

Medical Sciences

Keywords

Podocytes; Growth hormone; Mitotic catastrophe; Proteinuria



Early Detection and Assessment of COVID-19

Presenter

Dr. Hafiz Muhammad
Asif

Hafiz Muhammad Asif Hafiz Abdul sattar

University College of Conventional medicine, the Islamia University of Bahawalpur

Type

Oral Presentation

Abstract

Background: Since the Covid-19 global pandemic emerged, developing countries have been facing multiple challenges over its diagnosis. We aimed to establish a relationship between the signs and symptoms of COVID-19 for early detection and assessment to reduce the transmission rate of SARS-Cov-2. **Methods:** We collected published data on the clinical features of Covid-19 retrospectively and categorized them into physical and blood biomarkers. Common features were assigned scores by the Borg scoring method with slight modifications and were incorporated into a newly-developed Hashmi-Asif Covid-19 assessment Chart. Correlations between signs and symptoms with the development of Covid-19 was assessed by Pearson correlation and Spearman Correlation coefficient (ρ). Linear regression analysis was employed to assess the highest correlating features. The frequency of signs and symptoms in developing Covid-19 was assessed through Chi-square test two tailed with Cramer's V strength. Changes in signs and symptoms were incorporated into a chart that consisted of four tiers representing disease stages. **Results:** Data from 10,172 Covid-19 laboratory confirmed cases showed a correlation with Fever in 43.9% ($P = 0.000$) cases, cough 54.08% and dry mucus 25.68% equally significant ($P = 0.000$), Hyperemic pharyngeal mucus embrane 17.92% ($P = 0.005$), leukopenia 28.11% ($P = 0.000$), lymphopenia 64.35% ($P = 0.000$), thrombopenia 35.49% ($P = 0.000$), elevated Alanine aminotransferase 50.02% ($P = 0.000$), and Aspartate aminotransferase 34.49% ($P = 0.000$). The chart exhibited a maximum scoring of 39. Normal tier scoring was $\leq 12/39$, mild state scoring was 13-22/39, and star values scoring was $\geq 7/15$; this latter category on the chart means Covid-19 is progressing and quarantine should be adopted. Moderate stage scored 23-33 and severe scored 34-39 in the chart. **Conclusion:** The Hashmi-Asif Covid-19 Chart is significant in assessing subclinical and clinical stages of Covid-19 to reduce the transmission rate.

Track

Medical Sciences

Keywords

SARS-Cov-2, Hashmi-Asif Covid-19 Chart, incubation, leukopenia, lymphopenia, thrombopenia, morbidity



Multi-Omics Analysis and Preclinical Efficacy of LC015, a Novel Multi-Target Small Molecule for the Treatment of Lung Cancer

Presenter

Mr. Bashir Lawal

Type

Oral Presentation

Track

Medical Sciences

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Abstract

Lung cancer is the second most commonly diagnosed cancer and causes the highest death compared to other cancers. The five-year survival rate of patients has been very disappointing, reflecting the need for the development of new targeted therapy for the treatment of non-small cell lung cancer (NSCLC). In the present study, we evaluated the clinical relevance of hippo, EGFR, MEK, and mTOR oncogenic signalling networks and therapeutic efficacy of LC015, a novel multi-target small molecule against NSCLC. We found that the expression, genetic and epigenetic alterations of these oncogenic signalling molecules are linked to the progression, therapy resistance, immune-invasive phenotypes and worse prognosis of patients with NSCLC. Transcriptomic analysis based on single-cell RNA sequencing resolution revealed that MEK1, mTOR, YAP1 and EGFR were enriched on regulatory T cells, macrophages, and exhaustive CD8 T cells within the TME of patients with primary and metastatic NSCLC. In silico docking simulation revealed that LC015 demonstrated high efficacy for targeting MEK1, mTOR, YAP1 and EGFR as revealed by the docking fits and binding energy affinities. Particularly, we found that the novel small molecule exhibited higher binding efficacies against T790M and T790M/C797S mutant bearing variants of EGFR when compared to the efficacy of clinical third- generation inhibitor (osimertinib) against the two EGFR variants. In vitro studies using NSCLC cell lines (H1975 and H1299) revealed the inhibitory effects of the small molecule on the proliferation and oncogenic properties of NSCLC with concomitant suppression of the expression levels of mTOR, Akt, NF-KB, YAP1, EGFR, STAT3, ALDH, c-myc and SOX2. Furthermore, LC015 also demonstrated antitumor efficacy in tumour-bearing mice and enhanced the anti-NSCLC activities of osimertinib. In conclusion, our study reported a novel multi-target small molecule drug with promising efficacy for the treatment of NSCLC. Detail functional and molecular studies are currently going on in our laboratory.

Keywords

LC015; multi-target small molecule; Non-small cell lung cancer (NSCLC); epidermal growth factor receptor (EGFR); hippo pathway



Prevalence and Determinants of Common Mental Disorders (CMDs) Symptoms in an Rural Adult Population of North India

Presenter

Dr. MD. Abu Bashar

MD. Abu Bashar¹, Aseem Mehra², Arun Aggarwal²

Type

Oral Presentation

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Track

Medical Sciences

Abstract

Common mental disorders (CMDs) including depression, anxiety, and somatoform disorders constitute a major public health problem in developed and developing countries alike. It affects all stages of life and causes suffering to individuals, families and communities. Despite this fact, little information about their prevalence is available from rural settings. The aim of this study was to determine the magnitude of CMDs and its associated factors among adult residents of a rural block of North India. A cross-sectional, quantitative community-based survey was conducted from May to June 2017 in two villages of Raipur Rani block of Haryana, North India using a multistage random sampling technique. A total of 180 residents were selected using the two-stage sampling technique. Hindi version of a well-validated screening tool, General Health Questionnaire (GHQ-12), was used to determine the magnitude of common mental disorders. Data was entered and analyzed using Epi-info version 3.5.1 and SPSS-17 for windows statistical packages. Descriptive statistics was performed and univariate and bivariate analysis with 95% CI were employed to infer associations. The majority of the study participants were females (60.0%). The prevalence of symptoms of CMDs among the studied population was 20.0%. Presence of CMDs symptoms were significantly higher among those who were aged 60 years or above [OR=12.33, 95% CI 3.21-47.38], widowed, divorced or separated [OR=7.50, 95%CI 1.09-51.52], illiterate [OR= 6.25, 95%CI 2.84-13.77], having a monthly family income below 10,000INR [OR= 3.33, 95% 1.54-7.20], having any chronic physical illness [OR=8.28, 95%CI 3.70-18.56] and having a positive family history of any psychiatric illness [OR=5.56, 95%CI 1.52-19.42]. The study reveals that the prevalence of CMDs is alarmingly high among the rural North Indian Population. Being unemployed, widowed or divorced, having low average family monthly income, presence of any chronic physical illness and positive family history of any psychiatric illness were found to be significantly associated with the presence of CMDs.

Keywords

Common Mental Disorders; GHQ-12; Screening; Rural; Adult; North India



A Spectrum of MRI Findings for Morbidly Adherent Placenta: A Need for Standardization

Presenter

Dr. Khadija Arif

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Type

Oral Presentation

Track

Medical Sciences

Abstract

This study is directed to establish the diagnostic accuracy of MRT imaging in morbid adherence of placenta (MAP). It also determines the spectrum of MRI findings that are firmly predictive of MAP and those which can lead to a misdiagnosis. A retrospective study on 22 women with suspected morbidly adherent placenta was carried out. MRI was performed due to an inconclusive ultrasound report. MRI was reported by consensus of two proficient radiologists. Histopathological reports were taken as the gold standard for patients who underwent a hysterectomy. Per-operative findings were kept gold standard for negative cases in whom there was uneventful retrieval of placenta at the time of Cesarean section. Statistical analyses were applied to ascertain the association of different MRI features with MAP diagnosis. MRI correctly predicted MAP in 15 patients, excluded it in 5 cases and two of them were misdiagnosed. The Sensitivity of MRI in the study is 100%, Specificity 71%, Positive Predictive Value 88%, Negative Predictive Value 100%, and Accuracy is 90%. Highly inferable MRI findings are T2 dark bands, heterogeneous placental signals, direct invasion in adjacent tissue, and focal myometrial invasion with detection rates of 100%, 91%, 82%, and 82% respectively. The misleading findings include myometrium thinning (73%), abnormal placental vessels (73%), and tenting of the urinary bladder (45%). MRT is recommended imaging modality for the diagnosis of Morbidly Adherent Placenta, however inaccurate apprehension of observations can misidentify abnormal placentation.

Keywords

Placenta; Morbid adherence; MRI



Role of Gut Microbiome in Depression

Presenter

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Leena Grace Beslin

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Type

Oral Presentation

Track

Medical Sciences

Abstract

Lifestyle plays a key role in the mental and physical health of a person. As the world is getting modernized every day, things and problems are also getting modernized. In such a case, a serious problem faced by today's people is 'depression'. The gut and brain are two different regions in the human body differing in their functions. But in psychiatry, these two organs perform certain functions in a significant way that is responsible for our mental health. Over thousands of years, the gut ecosystem has evolved to contain a diverse population of microorganisms including yeasts, archaea, parasites, helminth, viruses, and protozoa, but the bacterial population is currently well characterized. Current estimates suggest that our microbial cells outnumber human cells by a ratio of 1.3: 1, while at a genetic level more than 99% of the genes in our bodies are microbial, comprising over 10 million microbial genes. The contribution of these microbes to human health and disease cannot be understated, as they play key roles in such functions as metabolism, satiety, and immune regulation and more recently they have been shown to play a role in mood and behavior. Our GI tract comes into contact with and maintains constant communication with, the microbes that inhabit our gut, either through direct physical contact or the release of secreted compounds. Current hypotheses suggest that these microbiota-host interactions at the level of the gut release cytokines, chemokines, neurotransmitters, neuropeptides, endocrine messengers, and microbial by-products that can infiltrate the blood and lymphatic systems, or influence neural messages carried by the vagal and spinal afferent neurons to constantly communicate with the brain and update as to the health status and possibly to regulate mood and behavior. From recent studies, researchers found out that depression in this modern world is caused by the emerging change in the lifestyle of the people. Since the gut microbiome is the responsible factor for controlling the mental health of people, any alterations or changes in the microfloral community can lead to depression and other mental problems. This article aims to discuss the relationship between human gut and brain and the role of probiotics and gut microbiome in reducing depression.

Keywords

Gut Feelings; Neurotransmitters; Probiotics; Serotonin; Vagus Nerve



Role of TNF-Alpha Levels and TNF-Alpha 238 Alleles Polymorphisms in the Severity of Anemia among Sudanese Children with Falciparum Malaria

Presenter

Dr. Khalid Abdelsamea
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Type

Oral Presentation

Abstract

Falciparum malaria is the most leading cause of mortality and morbidity in the world especially in Africa infants and young children due to severe malaria and malaria anemia. Tumor necrosis factor-alpha (TNF- α) level is a central proinflammatory cytokine, their production is associated with complications of falciparum malaria especially malaria anemia. The purpose of this study was to evaluate the association between TNF- α levels, TNF- α 238 alleles polymorphism, and anemia among Sudanese children with falciparum Malaria. A case-control hospital-based study was included 300 Sudanese children [100 severe falciparum malaria (with mean age 8.63 ± 3.40 years; 61% male; 39% female), 100 uncomplicated falciparum malaria (with mean age 8.83 ± 4.20 years; 45% male; 55% female) and 100 normal healthy children controls (with mean age 10.08 ± 3.58 years; 50% male; 50% female)]. RBCs parameters were determined using the Sysmex XP 300 N automated hematology analyzer. ELISA was further processed for TNF- α level using Human TNF- α ELISA MAX™ Deluxe Sets. DNA extraction was done using G-DEX™ IIb Genomic DNA Extraction Kit. PCR and gel running system were used for detecting TNF- α 238 Alleles polymorphism (A allele/ G allele). Obtained data were analyzed by SPSS (V 16.0) and Stat disk (V 13.0). Falciparum malaria-related anemia accounted for 32%, commonly in SM (55%) compared to UM (9%) giving highly statistically significant differences in TNF- α levels and falciparum malaria anemia and falciparum malaria (P-value 0.000). Otherwise, The average of TNF- α levels in mild, moderate, and severe anemia were (190.75 ± 102.55 , 189.70 ± 80.35 , and 299.75 ± 82.27 pg/ml respectively) giving highly significant differences between them (P-value 0.000) and strong significant positive correlation ($r + 0.309$; P-value 0.000). TNF- α 238 GA, AA, and GG account for (58, 36, and 6% respectively) in UM; while (51, 43, and 6% respectively) in SM. The TNF- α 238 A allele account for 83.6% of malaria anemia (P-value 0.000) and 100% severe anemia (P-value 0.000); TNF- α 238 A allele to be associated with susceptibility to 3.13 fold risk for developing anemia. Overproduction of TNF- α is essential for the elimination and clearance of the falciparum parasites but may associate with the severity of malaria. Overproduction of TNF- α in children with TNF- α 238 A Allele may result in falciparum malaria anemia among children (mainly severe anemia). The results obtained in this study will help clinicians to diagnose and to improve the management of severe malaria cases.

Track

Medical Sciences

Keywords

Falciparum malaria anemia; TNF-Alpha Levels; TNF-Alpha 238 Alleles; RBCs



Early Postnatal Fostering Altered Cocaine-Induced Inheritable Epigenetic Marks and Non-Specific Chronic Inflammation in Drug-Naïve Offspring Mice

Presenter

Dr. Duyilemi Ajonijebu

Type

Oral Presentation

Track

Medical Sciences

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Abstract

This study explored the hypothesis that parental cocaine exposure could provoke brain-specific epigenetic changes and alter the population of circulating inflammatory cells in the drug-naïve offspring mice while early postnatal fostering may further contribute to the accompanied neurochemical and functional consequences. Variant drug-naïve pups were produced from cocaine-exposed or unexposed C57BL/6 female mice that were matched with their male counterparts for mating. Within 3 days of birth, half of the pups were cross-fostered and nurtured by non-biological lactating dams. The pups were initially examined for locomotor activity and memory performance, followed by assessment of total white blood cells and differential counts of neutrophil and lymphocyte using blood analyser. Subsequently, changes in DNA methylation in promoter regions of cAMP response element modulator (Crem) and Fosb in the prefrontal cortex was assessed at 48 days postnatum. The impact of postnatal fostering on these parameters was also investigated. Our results showed that cocaine exposure significantly decreased both Crem and Fosb methylation in the prefrontal cortex of progenitor mice, while similar patterns of methylation were replicated in the brains of drug-naïve non-fostered offspring mice but reversed by postnatal fostering. Furthermore, offspring raised by cocaine-exposed dams were impaired in discriminative learning and exhibited memory decline, whereas locomotor activity remains unaltered in all groups of mice. Also, parental cocaine exposure was linked to increased neutrophil-lymphocyte ratio that was reversed by early postnatal fostering. Our data provide some evidence that indirect exposure to cocaine may cause non-specific chronic inflammatory changes in blood and marked epigenetic changes within the cortical networks of drug-naïve descendants. These changes have consequences for brain development and cognitive functions in the progenies.

Keywords

Cocaine; DNA methylation; Crem; Fosb; Neutrophil-lymphocyte ratio; Cognition; Postnatal fostering



Assessment of Hematological and Serum Electrolytes Effects of Intermittent Fasting on Mice

Presenter

Dr. David Chibuikwe Ikwuka

David Chibuikwe Ikwuka^{1,2}, Bond Ugochukwu Anyaehie², Eghosa E. Iyare², Princewill Ugwu², Amechi Uchenna Katchy³, Gabriel Ejike Igbokwe⁴, Jide Uzowuru Uzoigwe², Emmanuel Nonso Ezeokafor¹ and Kelechi Love Ezeudensi¹

Type

Poster Presentation

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Track

Medical Sciences

Abstract

There is growing interest on trying to explore the importance of fasting to health as it has been practiced as religious exercises for centuries. This study assessed the haematological and serum electrolytes effects of intermittent fasting (IF) on mice. Fifty (50) male mice were randomly assigned into five (5) groups A, B, C, D and E (n=10). Group A (control) was fed normal chow ad libitum, experimental groups B,C,D and E were fasted seven weeks intermittently for 12, 18, 24 and 48 hours respectively. Blood samples were collected and analysed for haematological and electrolyte indices. Data obtained were analyzed using IBM SPSS Statistics 25. Our findings revealed no significant differences in the RBC, HGB, HCT, MCV, MCH and MCHC between the different fasting groups and the control. There was increase significantly in group C for Red density width-coefficient of variance (RDW-CV) and group C and E for Red density width-standard deviation (RDW-SD). Platelet count decreased, plateletcrit increased significantly in group C. There were no significant differences in the mean platelet volume (MPV), platelet distribution width (PDW), platelet-large cell count (P-LCC) and Platelet-large cell ratio (P-LCR). Sodium ion decreased significantly in group C and chloride ion decreased significantly in group B, C and E. There were no significant differences in serum potassium ion and bicarbonate ion. 12, 24 and 48 hours IF are safe and do not negatively influence hematological indices and electrolyte levels but 18 hours IF could have a slightly negative effect on platelet count, plateletcrit and sodium ion levels.

Keywords

Intermittent fasting; Diseases; Weight; Electrolytes; Platelet; Red blood cell



Chemical and Microbial Evaluation of Easy way Storage of Prickly Pear (*Opuntia ficus indica*)

Presenter

Mr. Iyad A. M. Alzaeem

Iyad A. M. Alzaeem¹, Sherif Ramzy² and Khadir Ebrahim¹

Type

Poster Presentation

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Track

Medical Sciences

Abstract

Prickly Pear is a good source of sugars, protein, minerals, and many types of amino acids (alanine, arginine, and asparagine). Important vitamins such as vitamin C, E, K, and beta-carotene. Flavonoids, effective antioxidants as well. The *Opuntia ficus indica* (OFI) is available in limited season, so it is urgent to store it in good condition; therefore the main goal was to study and evaluate of storage process of OFI for three months in plastic PE to extend the shelf life and availability in other seasons. Each whole and peel OFI were stored in plastic PE for three months and the gross chemical composition and microbial quality were evaluated at zero time and during three months of storage. The results of chemical composition showed gradually slight increase of water content for both whole, peel fruit with increase the storage period after 1-3 months, and gradually decrease of the Brix, while the total sugar decreased in the control and all stored OFI. Protein content there are no significant differences between the control and all stored samples., The pH value showed a slight decrease., Total ash had no significant differences between the control ash value and whole or peel OFI., the acidity was slightly increased due to increase the storage period for three months, on the contrary, the significant decrease in total carbohydrate and fat were noted due to the storage period. The microbial quality of stored whole and peel OFI were evaluated and the results showed negative TC for all tested stored samples and control as well, while after two and three months an insignificant increase of TC was noted. T. Coliform not noted at zero time or during storage, as well as yeast not detected, while the molds noted, grew after the first month of storage of control, it worth mentioning that the whole OFI was free from molds at zero time and during two months of storage period but after the third month had 6.66×10^2 CFU/g and almost the same trend for the peel to record 10 and 200 CFU/g after two and three months of storage.

Keywords

Prickly Pear; *Opuntia ficus indica*; Storage; Freezing



Asymptomatic Malaria and Helminthes Co-infection and its Association with Anemia among Primary School Children: A Cross-Sectional Study in Gedeo Zone, Southern Ethiopia

Presenter

Ms. Feven Wudneh

Feven Wudneh, Yabibal Gebeyehu, Sara Anberbir

Dilla University, Ethiopia

Type

Poster Presentation

Track

Medical Sciences

Abstract

Asymptomatic malaria and helminths co-infection occurs mainly in the tropics and sub-tropics where poverty and sanitary practice favor for their high prevalence. In the tropics, where malaria is endemic, helminths also thrive and resulting in co-infection. This study aims to access the prevalence of asymptomatic malaria and helminths co-infection and its contribution to anemia in primary school children of Gedeo Zone, Southern Ethiopia. This was a cross-sectional study conducted among 413 primary school children in the Gedeo zone from February to April 2020. Finger-prick blood samples were used to determine malaria and hemoglobin concentrations. Stool samples were collected and processed through formalin ether concentration techniques to detect the presence of intestinal helminths. Data were double entered into Epi Data version 3.1 software and exported to SPSS version 20 software for analysis. The Pearson's chi-square and correlation analysis were performed as part of the statistical analyses. A total of 413 primary school children aged 6 to 16 years (mean age \pm SD: 10.7 \pm 2.64 years) were enrolled in the study. 159 (38.5%) of school children were infected with at least one of the parasitic diseases. The overall prevalence of asymptomatic malaria and intestinal helminthes infection was 46 (11.1%) and 113 (27.3%) respectively. Asymptomatic malaria and helminths co-infection prevalence were 29 (7%). A total of 39.1% of asymptomatic malaria-infected school children were anemic, which is statistically significant ($p < 0.05$). 15.9% of helminthes infected school children were anemic, not statistically significant ($p > 0.05$). The prevalence of anemia was 12 (41.3%) among co-infected students, which is statistically significant ($P < 0.005$). Asymptomatic malaria and helminths co-infection affect the health status of a considerable number of primary school children in the study area. Therefore, simultaneous combat against the two parasitic infections is crucial to improve the health of the community.

Keywords

Asymptomatic Malaria; Helminthic infections; Co-infection; Anaemia; Ethiopia



Anabolic Androgenic Steroid Induced Oxidative Tissue Damage and Decline Ubiquitous Antioxidant System in Renal Tissue

Presenter

Dr. Adejoke Elizabeth Memudu

Type

Poster Presentation

Track

Medical Sciences

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²Department of Anatomy, College of Medicine, Bingham University; P.M.B 005, Karu, Nasarawa State, Nigeria

Abstract

Over the years Anabolic Androgenic steroids (AAS) have been used and abused by teens, athletes, and bodybuilders. There are documented reports of its deleterious side effects, but little has been written on its mechanism of inducing oxidative tissue damage even in the presence of intracellular antioxidants. Hence it is imperative to evaluate the interaction between lipid peroxidation and the antioxidants in the renal cortex following exposure to AAS. Twenty (20) adult male Wistar rats used in this study, were divided into four (4) groups viz: A- Control, B- Olive oil, C- 120 mg/kg of Anabolic-Androgenic Steroid [Testosterone Undecanoate] orally for three weeks and D= the one-week post-treatment recovery. Blood samples were collected for spectro-photometric analysis of lipid peroxidation marker; Malondialdehyde (MDA) and antioxidant enzyme marker Superoxide Dismutase (SOD). The excised renal tissues were fixed in 10% formal saline and processed for Haematoxylin and Eosin stain, as well as Periodic Acid Schiff stain, used to demonstrate mucin granules/ basement membrane. Results obtained show that there was a statistically significant increase in the activity of lipid peroxidation marker Malondialdehyde (MDA) with a decline in superoxide dismutase activity in AAS treated rats when compared with other experimental groups. However, the recovery group (D) showed a marked reduction in MDA and a mild increase in SOD activity as compared to AAS treatment. Glomerulus and renal tubules showed disruption of cellular integrity of the glomerular epithelial cells and the cuboidal cells of the proximal convoluted tubule when compared with the control and recovery groups. PAS demonstrates loss of mucin granules and basement membrane cell adhesion integrity in the AAS treated group as compared with the control and AAS recovery group- D. However, the recovery group showed progressive cellular regeneration from the oxidative tissue damage induced by AAS. Hence, AAS has the potential to mediate renal oxidative tissue damage that disrupts the endogenous antioxidants, but when AAS is discontinued SOD upregulates and increases the rate of mobbing of free radicals/reactive oxygen species (ROS) generated that can cause renal tissue oxidative stress, necrosis, or in some cases progressive acute or chronic renal failure.

Keywords

Anabolic-Androgenic steroids; Lipid peroxidation; Oxidative damage; Superoxide dismutase; Renal epithelium



Effects of Virgin Coconut Oil and Curcumin on Biochemical Alterations, Markers of Oxidative Stress and Histopathological changes in Streptozotocin Induced Diabetic Nephropathy in Laboratory Rats

Presenter

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Type

Oral Presentation

Track

Pharmacology &
Toxicology

Abstract

Nephropathy is considered as one of the major secondary complications in diabetic patient. The present study was design to carried out preclinical screening of virgin coconut oil solubilised curcumin in diabetes induced nephropathy. Male albino rats of wistar strain were injected with single dose of streptozotocin (STZ) (60 mg/kg/i.p). Nephropathy was developed after 4 weeks of STZ injection and the treatment was continued for further 4 week (total protocol was for 8 weeks). Diabetic nephropathy (DN) rats were treated with virgin coconut oil (8ml), virgin coconut oil solubilised curcumin at low dose (0.66mg/4ml/kg) and virgin coconut oil solubilised curcumin at high dose (1.32mh/8ml/kg). DN was assessed by evaluating biochemical parameters such as blood glucose, total protein, albumin, urea, creatinine, and total bilirubin from serum and urine sample, whereas the activity of endogenous antioxidant and membrane bound phosphatases were studied from kidney homogenate. Virgin coconut oil solubilised curcumin significantly reduced the blood and urine glucose level, increased body weight and reduced kidney weight and kidney hypertrophy. It also normalized urine volume, albumin, creatinine, total protein, total bilirubin and urea levels. Treatment also significantly improved antioxidants and membrane bound phosphatases activities. Histopathological changes of kidney also corelated the different findings in rats. In conclusion virgin coconut oil solubilised curcumin protect the changes toward normal as compared to individual treatment group. This protection might be due to the strong antioxidant activity of both the compounds

Keywords

Virgin coconut oil; Curcumin; Diabetes; Nephropathy; Antioxidants



Analysis and Sub-chronic Toxicity Tests of Arabica Coffee (*Coffea arabica* L.) Pulp Extract on Mice (*Mus musculus* L.)

Presenter

Dr. Rita Maliza

Type

Oral Presentation

Track

Pharmacology &
Toxicology

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Abstract

The coffee pulp (*Coffea arabica* L.) contains anthocyanin compounds, β -carotene, and vitamin C, which functions as sources of antioxidants. Recently, dried skins of coffee cherries are often used as energy food and healthy drinks. This study aimed to determine the effect of subchronic toxicity of coffee pulp extracts on liver histopathology and enzymes SGOT and SGPT in mice. Phytochemical analysis of the coffee pulp extract was performed by (GC-MS). A subchronic toxicity test was carried out on 25 experimental animals of Balb/C mice divided into five groups. The first group (control) was kept with aquadest treatment, whereas the treatment groups were given coffee pulp extract orally at different doses of 75, 250, 500, and 1000 mg/kg body weight (BW) for 28 days. The result of GC-MS analysis showed evident that major phytochemicals namely, 2,3-Epoxyhexanol (16,33%), 2-Aminosuccinonitrile (10,79%), Glycerin (9,15%), Hexanoic acid, 3-ethyl-, methyl ester (3,70%), 1,2:4,5:9,10-Triepoxydecane (2,98%), Heptanoic acid, 2-methyl-2-butyl ester (2,83%), Z-1,6-Undecadiene (1,76%), 5,10-Dioxatricyclo [7.1.0.0(4,6)] decane (1,44%) and Z-1,9-Dodecadiene were found. The administration of variations in coffee pulp extracts affected hepatocyte changes, especially necrosis hepatocyte cells ($P < 0.05$) and the presence of inflammatory cell infiltration at doses of 1000 mg/kg BW. SGOT enzyme activity is directly affected by giving dose variations ($P < 0.05$) and increased significantly ($P < 0.05$) at doses of 1000 mg/kg BW. Furthermore, SGPT enzyme levels are not directly affected by dose variations. This research concludes that the methanol extract of coffee pulp (*Coffea arabica* L.) gives a toxicity effect at a dose of 1000 mg/kg BW.

Keywords

Coffee pulp; Subchronic Toxicity; SGOT; SGPT; Hepatocytes



Anti-Oxidative Potential of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) in Amelioration of Depression Like Symptoms in Heterotypic Stressed Rats

Presenter

Dr. Shaista Emad

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Type

Oral Presentation

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Track

Pharmacology &
Toxicology

Abstract

Inflammation may not only act as a triggering element that leads a person into a state of depression but also a propagating feature that causes hurdles in retrieval. Depression is a severe psychiatric disorder with oxidative imbalance underlying mechanisms. In patients suffering from depression, inflammation is commonly seen in the periphery as well as in the brain. Due to disproportionate release of stress hormones, oxidative status abnormalities, and changes in the neurotransmission system, exposure to a variety of stresses in everyday life can lead to neuroinflammation and the development of depressive behavior. Antiinflammatory drugs targeting cyclooxygenase enzymes and restrain inflammatory responses have gained prominence in a number of psychiatric disorders. The current study demonstrated that rats exposed to heterotypic stressors such as restraint, noise and shaker stress for one week implicated depression like symptoms. The depressive behavior were investigated by forced swim test (FST) and open field test (OFT) in rats. The biochemical changes were investigated by measuring plasma corticosterone levels as well as lipid peroxidation (LPO) and modification in antioxidant enzymes (SOD, CAT and GPx) activities in rat brain. Pre-treatment with two commonly used anti-inflammatory drugs indomethacin (7.5 mg/kg) and diclofenac sodium (5 mg/kg), significantly attenuated depressive behavior in rats. According to the current findings, NSAIDs could be employed as an adjunct therapy to increase the efficacy of antidepressant medicines.

Keywords

Depression; Inflammation; Lipid peroxidation; NSAIDs; Oxidative enzymes; Stress



Antidiabetic Effect of Ethanolic Root Extract of *Asparagus africanus* using In-vitro and In-vivo Models

Presenter

Dr. Rita Maneju Sunday

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Type

Oral Presentation

Track

Pharmacology & Toxicology

Abstract

Diabetes mellitus is a metabolic disease that is on the increase globally in recent years. This metabolic disorder occurs as a result of lack of insulin production by the pancreas, resistance of cells to insulin, and also due to insufficient production of insulin by the pancreas. Medicinal use of plants in the prevention, treatment, and management of diseases in recent years is on the increase. *Asparagus africanus* Lam is a medicinal plant used in traditional medicine in Nigeria for the treatment of various diseases. In this study, the antidiabetic effect of *Asparagus africanus*, root ethanolic extract was evaluated using both in-vitro and in-vivo models. In the in-vitro studies, the effect of the ethanolic root extract of *Asparagus africanus* (62.5, 125, 250, 500 and 1000 µg/100 µl) on carbohydrate metabolizing enzymes (α -amylase and α -glucosidase) was determined by spectrophotometric technique. In the in-vivo model the treatment was administered orally (p.o) to six Wistar rats per group (both male and female Wistar rats). Wistar rats were administered the ethanolic root extract of *Asparagus africanus* at 100, 200 and 400 mg extract/kg body weight Wistar rats (p.o) to streptozotocin (60 mg/kg) induced diabetic Wistar rats. Whereas in the untreated group, the Wistar rats were not administered the extract. Streptozotocin-induced diabetic Wistar rats in the control group were treated with 5 mg glibenclamide (standard drug)/kg body weight of Wistar rat (p.o). *Asparagus africanus* root extract inhibited α -amylase and α -glucosidase enzymes in a dose-dependent manner when compared with the control in the in-vitro studies. The extract at 400 mg/kg significantly ($p < 0.05$) decreased fasting blood glucose level, increased serum insulin and serum α -amylase level in 21 days treated diabetic Wistar rats when compared with the lower doses of the extract. *Asparagus africanus* root might exert its antidiabetic effect by inhibiting α -amylase and α -glucosidase enzymes; and by enhancing insulin secretion by pancreatic cells by increasing serum insulin and serum α -amylase level.

Keywords

Asparagus africanus; Diabetes; Root; Insulin; Wistar rats



Plant Products into Therapeutics through a Comprehensive and Combined Approach of Experimentations

Presenter

Prof. Md Atiar Rahman

Md. Atiar Rahman PhD

University of Chittagong, Bangladesh

Type

Oral Presentation

Track

Pharmacology &
Toxicology

Abstract

This research explored the combined experimental approaches for translating a plant product into therapeutics. *Lasia spinosa*, a local Bangladeshi herb, has been incorporated for its antidiabetic potential in type 2 diabetes models. Phytochemical, GC-MS, LC-MS, HPLC analyses, acute toxicity reports, and nutritional indices were accomplished using established methods. Fructose-feed streptozotocin-induced diabetic intervention was subjected followed by biochemical, histopathological, and molecular (PCR) analyses. The results were verified by compound-ligand interaction and network-pharmacological bioinformatics for function-specific gene-compound interactions using STITCH, STRING, GSEA, Cytoscape plugin cytoHubba. Potential bioactive compounds were identified through GC-MS, LC-MS, and HPLC analyses. An eight-week animal study showed optimized body/organ weight ratio, decreased blood glucose, liver glycogen, serum alanine transaminase (ALT), aspartate transaminase (AST), creatine kinase (CK-MB), lipid profile, and lactate dehydrogenase (LDH). Oral glucose tolerance (OGTT) ability, serum insulin concentration, and pancreatic islets and kidney tissue architectures were improved and α -amylase inhibition was unaffected which were further confirmed by the mRNA expression of superoxide dismutase 1 (SOD1) and catalase (CAT). Additionally, RT-PCR analysis showed the downregulation of β -actin (26.27%), PON1 (28.01%), and PFK1 (34.17%) in intoxicated animal groups. The most prevalent phytochemical n-hexadecanoic acid showed a promising binding affinity (-27.473 cal) with the insulin binding receptor GLUT1. Oleanolic acid and stigmasterol highly interacted with 27 target proteins such as AKR1B10, CASP3, CASP8, CYP1A2, etc.) Protein-protein interaction (PPI) analysis revealed the involvement of 25 target proteins. Pathway analysis identified 31 KEGG metabolic and signaling pathways associated with diabetes implying the potential of plant products studied through combined experimental models.

Keywords

Lasia spinosa; Superoxide dismutase; Catalase; Streptozotocin



PROCEEDING ES 2022



Antibacterial Nanocomposite Films for the Treatment of Infected Burn Wounds

Presenter

Prof. Ghulam Murtaza

Ghulam Murtaza

Department of Pharmacy, COMSATS University Islamabad, Lahore Campus, Pakistan

Type

Oral Presentation

Abstract

Several sources including fire, acid and cuts can induce wounds. Most of the wounds are prone to infection. The phenomenon of antibiotic resistance urges us to discover the newer antibacterial formulations, especially bandages. We have currently developed antibacterial nanocomposite films for the treatment of infected burn wounds. Nanocomposite films were developed by using the solvent casting method and employing various biopolymers such as chitosan and sericin. Wound healing potential was tested in the infected wound bearing rabbits. The findings of this study revealed that the developed nanocomposite films were promisingly effective in wound healing.

Track

Pharmacology &
Toxicology

Keywords

Wounds; Infection; Antibiotic resistance; Bandages; Nanocomposite films; Solvent casting method; Biopolymers



Modulatory Potential of Citrus and Moringa Extracts and Epiphytes on Rat Liver Mitochondrial Permeability Transition Pore

Presenter

Dr. Akinwunmi O Adeoye

Akinwunmi O. Adeoye., John A. Falode., Temitope O. Jeje., Praise T. Agbetuyi-Tayo., Sikirat M. Giwa., Yesirat O. Tijani and Damilola E. Akinola

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Type

Oral Presentation

Abstract

Bioactive agents from medicinal and dietary plants have been reported to modulate the mitochondrial membrane permeability transition pores. This study investigated the *in vitro* effects of *C. sinensis* (CSE) and *M. oleifera* (MOE) methanol leaf extracts and their epiphytes (CEP and MEP) on mitochondria permeability transition pores. *In vitro*, antioxidant activities of the extracts were determined using standard procedures and quantification of polyphenolic compounds in the extracts was done using HPLC-DAD. Opening of the mitochondrial permeability transition pores was assessed as mitochondrial swelling and observed spectrophotometrically as changes in absorbance under succinate-energized condition. Cytochrome c release was also assessed spectrophotometrically. From the results, CSE, MOE, CEP, and MEP inhibited lipid peroxidation and scavenged nitric oxide and DPPH radicals in a concentration-dependent manner. All extracts exhibited greater ferric reducing antioxidant potential. More so, the results showed that CSE, MOE, CEP, and MEP possess substantive amounts of total flavonoids and total phenolics. CSE and MOE had higher total flavonoids and total phenolic content when compared with the epiphytes. HPLC-DAD results revealed Tangeretin as the most abundant in CSE; Eriocitrin in citrus epiphytes; Moringine in MOE and Flavones in moringa epiphytes. All extracts inhibited calcium-induced opening of the pores in a concentration-dependent manner with *C. sinensis* leaf extract (CSE) and moringa epiphyte (MEP) are the most potent in this regard with no significant release of cytochrome c at all concentrations. The results suggest that CSE and MEP have bioactive agents which could be useful in the management of diseases where too many apoptosis occurs characterized by excessive tissue wastage such as neurodegenerative conditions.

Track

Pharmacology & Toxicology

Keywords

Mitochondrial permeability transition; Cytochrome c; Apoptosis; Antioxidant; HPLC-DAD.



Effect of *Ochna Kibbiensis* Leaves on *Plasmodium berghei*

Presenter

Dr. Amina Yusuf Jega

Type

Oral Presentation

Track

Pharmacology &
Toxicology

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Abstract

Ochna kibbiensis (Family: Ochnaceae) has been employed in ethnomedicine for the treatment of malaria, asthma, dysentery, inflammation among others. This study was aimed at evaluating the effect of methanol leaf extract of *O. kibbiensis* and its n-hexane, dichloromethane, ethylacetate, and n-butanol - soluble fractions against *Plasmodium berghei*. The median lethal dose (LD₅₀) of the methanol extract and its fractions was determined according to Lorke's method while the antimalarial effect of the extract and its fractions was investigated according to the methods described by Ryley and Peters suppressive, curative and prophylactic test using Chloroquine-sensitive *Plasmodium berghei* (NK65). All the extract/fractions exhibited LD₅₀ value >5000 mg/kg with the exception of the n-butanol fraction (1702.94 mg/kg) which indicate that the plant is relatively safe. The methanol leaf extract of *O. kibbiensis* and its fractions exhibited significant ($p < 0.05$) suppression of parasitemia in a dose-dependent manner at 500, 250 and 125 mg/kg, respectively; the n-butanol fraction was the most active with 94.0, 98.0 and 84.0 % chemo-suppression while the methanol leaf extract was the least with 32.5, 40.0 and 62.0 % chemo-suppression of parasitemia; the standard drug, chloroquine (CQ, 5 mg/kg) had 94.0 %. The n-Butanol fraction showed significant ($p < 0.05$) and dose-dependent effect in the curative test with 58.14, 74.40 and 94.20 % cure and CQ had 69.80 % at the tested doses while n-hexane fraction was the least active with 41.9, 14.0 and 2.3 % cure. Dichloromethane fraction exhibited significant ($p < 0.05$) and dose-dependent prophylactic effect with 47.62, 85.12 and 100.0 % prophylaxis while the least effect was observed by the n-butanol fraction with percentage prophylaxis of 64.29 and 76.19, respectively; the standard drug, pyrimethamine had 95.24 % prophylaxis. In conclusion, the leaf of *O. kibbiensis* have demonstrated significant antimalarial effect and efforts are being made to isolate the bioactive constituents responsible for the observed effects.

Keywords

Ochna kibbiensis; Leaf; Malaria; Toxicity



A Novel Green Synthesized Silver Nanoparticle act as a Nonozyme and Potentially Useful against Oxidative Stress: Challenges and Opportunities

Presenter

Dr. Soumendra Darbar

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Type

Oral Presentation

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Track

Pharmacology &
Toxicology

Abstract

Biomedicine specially Nanomedicine is the medical application of nanotechnology the promising weapon in the medical world to treat various communicable and noncommunicable diseases. This target specific medicine is very useful for prevention and treatment of life threatening diseases through inhibition of reactive oxygen species (ROS). We develop a novel Silver Nanoparticle coupled with *Andrographis paniculata* (AP-Ag NP) act as a nonozyme in mammalian system. For development of Oxidative stress and inflammation one group of mice were exposed to carbon tetrachloride (CCl₄) for 8 week and another group co-administered orally with AP-Ag NP (50 mg/kg each) to evaluate redox scavenging activity. The results suggest a significantly elevated ROS, decreased blood and hepatic GSH levels, superoxide dismutase and catalase activities after carbon tetrachloride (CCl₄) exposure. Co-administration of nano-antioxidants (AP-Ag NP) increased SOD, CAT and GSH levels and was also beneficial in the recovery of oxidative injury and restoring inhibited aminolevulinatase (ALAD) activity. Our results suggest that AgNP synthesized using *Andrographis paniculata* (AP-Ag NP) have the potential antioxidant activity in experimental animals. For establishing the material as a commercial drug large animal experimentation, long term stability study, details clinical study, pharmacovigilance study, regulatory clearance, sponsor, marketing, advertisements etc. are the main challenges in the post COVID era. On the other hand if we clear all these hurdles then society obtain a low cost, easy to perform, sustainable, nontoxic safe and symptomatic target specific Nanomedicine which may be very useful and effective for life threatening diseases.

Keywords

Nanomedicine; AgNP; *Andrographis paniculata*; Protection; Free radicals; Lipid peroxidation



Pharmacological Mechanism of Antiulcer Activity of Chromatographic Fraction obtained From *Acacia nilotica* Seedpod in Experimental Rats

Presenter

Dr. Azeemat Titilola
Abdulazeez

Type

Oral Presentation

Track

Pharmacology &
Toxicology

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Abstract

Acacia nilotica (Lam) is an important multipurpose tree with many indigenous uses. It is most widely found in Northern Nigeria, tropical and sub-tropical countries. It is used therapeutically to alleviate and manage many illnesses. *Acacia nilotica* seedpod is used in local traditional medicine to treat gastric-related disorders. The present study was aimed at evaluating the antiulcerogenic activity and possible mechanism of gastroprotection of chromatographic fraction derived from *Acacia nilotica* n-butanol partitioned extract using ethanol for ulcer induction. Chromatographic fractionation of the n-butanol solvent partitioned extract yielded three different fractions (FA, FB, and FC). FB showed the most effective activity of ulcer protection with 96.08% ulcer protection activity. The possible mechanism of action of FB was assessed by investigating the involvement of endogenous nitric oxide, non-protein sulfhydryl group, and prostaglandin. The ulcer index of ulcerated rats pre-treated with NG-nitro-L-arginine methyl ester (L-NAME) which is a nitric oxide synthase inhibitor and subsequently administered with Fraction B was not significantly higher ($P < 0.05$) from rats in the ulcerated group. Similarly, Pre-treatment with N-ethylmaleimide (NEM), a blocker of endogenous sulfhydryl to ethanol-induced ulcerated rats that were treated with chromatographic FB gave an ulcer index that was not significantly different ($P < 0.05$) from the ulcerated control group. However, prostaglandin synthesis inhibition by pretreatment with indomethacin did not affect the gastroprotective activity of FB. The study concludes that the observed anti-ulcerogenic activity exhibited by chromatographic Fraction B of *Acacia nilotica* n-butanol partitioned extract is possibly due to the increase in NO synthesis and endogenous sulfhydryl group.

Keywords

Acacia nilotica; Chromatographic fraction; Anti-ulcerogenic; NG-nitro-L-arginine methyl ester; N-ethylmaleimide



Antidiabetic Property of *Alchornea cordifolia* Seed Essential Oils

Presenter

Dr. Ayodeji Oluwafemi
Idowu

Type

Oral Presentation

Track

Pharmacology &
Toxicology

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Abstract

Diabetes mellitus is a chronic metabolic disorder with rapidly increasing prevalence. The cost of caring for diabetes and its related complications are staggering with conventional therapeutics being expensive and prone to side effects hence the need for natural alternatives. The study investigated the antidiabetic potential of *Alchornea cordifolia* seed essential oil. The essential oil of *Alchornea cordifolia* was extracted via hydrodistillation and characterized with gas chromatography-mass spectroscopy. The inhibitory effect of the essential oil on α -amylase and α -glucosidase activities was investigated *in vitro*. The result reviewed that *A. cordifolia* contains thirty five (35) chemical compounds out of which seven were prominent. The two most abundant compounds seen were 9,12-octadecadienoic acid and n-hexadecanoic acid and constituted 79.09 % of the total compounds. The inhibitory activity of the oil extract on α -amylase was dose dependent with the highest percentage inhibition (65.14 %) achieved at the highest concentration (50mg/ml). The oil extract also exhibited a significant inhibitory effect on α -glucosidase at the concentrations (10, 20, 30 40 and 50 mg/ml) investigated with the maximum inhibitory activity (72.30 %) attained at 50 mg/ml which was comparable to the reference antidiabetic drug (Acarbose). This study suggests the potential use of *Alchornea cordifolia* seed oil extract as an agent for the control of diabetes.

Keywords

Diabetes; Amylase; Glucosidase; Essential oil; *Alchornea cordifolia*



Structure-Function Relationship and Mechanism of Action of Exfoliative Toxin D From *Staphylococcus aureus*

Presenter

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Type

Poster Presentation

Track

Pharmacology &
Toxicology

Abstract

The *Staphylococcus aureus* (*S. aureus*) exfoliative toxins (ETs) are the main toxins that produce staphylococcal scalded skin syndrome (SSSS), an abscess skin disorder. The victims of the disease are usually newborns and kids, as well as grownup people. Five exfoliative toxins namely, exfoliative toxins A, B, C, D, and E have been identified in the *S. aureus*. Of these, the three-dimensional (3D) structure of Exfoliative toxins A, B, C & E is known, while that of exfoliative toxin D is still unknown. In this work, we have predicted the three-dimensional structure of exfoliative toxin D (ETD) using protein modeling techniques (software used for 3D structure modeling comprising, MODELLER 9v19 program, SWISS-Model, and I-TESSER). The validation of the build model was done using PROCHECK (Ramchandran plot), ERRAT2 and Verify 3D programs. The results from 3D modeling show that the build model was of good quality as indicated by GMQE score of 0.88, 91.1 % amino acid residues are in the most favored region of Ramachandran plot, the ERRAT2 quality factor of 90.1% and verify3D score of > 0.2 for 99.59% of amino acid residues. This represents the first structure report of ETD. The 3D structure analysis indicates that the overall structure of ETD is similar to the chymotrypsin-like serine protease fold. The structure is composed of thirteen β -strands and seven α -helices that fold into two well-defined six-strand β -barrels whose axes are roughly perpendicular to each other. The active site residues include Histidine-97, Aspartic acid-147, and Serine-221. This represents the first structure report of ETD. Structural comparison with other ETs shows some differences particularly in the loop region, which also change the overall surface charge of these toxins. This may convey variable substrate specificity to these toxins. The inhibition of these toxins by natural (2S albumin and flocculating proteins from *Moringa oleifera* seeds) and synthetic inhibitors (Suramin) was also carried out in this study. The results from docking indicate that the inhibitors bind near the C-terminal domain which may restrict the movement of this domain and may halt the access of the substrate to the active site of this enzyme. Molecular Dynamic Simulation was performed to see the effect of inhibitor binding to the enzyme. This work will further elucidate the structure-function relationship of this enzyme. The inhibition of this enzyme will lead to a new treatment for SSSS.

Keywords

Staphylococcus aureus; Exfoliative toxins; Exfoliative toxin D; Comparative protein modeling; Three-dimensional structure characterization; Inhibition



Anti-Inflammatory Effect of Non-Essential Amino Acid - Glycine

Presenter

Dr. Senthilkumar
Rajagopal

Type

Poster Presentation

Track

Pharmacology &
Toxicology

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Abstract

A non-essential amino acid, Glycine is most important and simple amino acid present in all humans, animals, and many mammals. In recent investigations revealed that glycine supplementation are highly involved in most of the metabolic disorders such as cardiovascular diseases, several inflammatory diseases, obesity, cancers, and diabetes. Different agonists like alcohol, endotoxin, peptidoglycan, polysaccharide, bile acids and etc can increase the intracellular calcium influx in various excitable cells and glycine can blocks the more calcium influx into cells, and changes the physiological functions. Aim: a) The aim of the present study was to investigate the anti-inflammatory effect of glycine, a non-essential amino acid in an in vitro model. and ii) the PKC isozymes responsible for the action of alcohol were investigated using translocation as a measure of activation. Methods: Human Umbilical Vein Endothelial cells damage was induced by an ethanol (5%) and glycine was subsequently administered at a dose of 300 μ M for 24 hrs. Translocation of PKC isozymes to the membrane studied by western blot. Results: Administration of alcohol significantly elevated the inflammatory cytokines Tumor necrosis factor- α (TNF- α) and Interleukin 6 (IL-6), activity of myeloperoxidase and depleted reduced glutathione (GSH) concentration compared with control group. Subsequently, glycine supplementation to alcohol induction significantly lowered the TNF- α and IL-6 reduced the activity of myeloperoxidase and normalized the glutathione concentration compared with untreated alcohol induction groups. Exposure of the cells to ethanol (5%) led to the translocation of PKC α and epsilon. Conclusion: Thus, the present study demonstrates that inhibitory effect of glycine by virtue of its ability to optimize the activity of myeloperoxidase, normalize the concentrations of inflammatory cytokines and reduced glutathione. To understand the physiological significance of PKC α and epsilon translocation to the membrane by alcohol, further studies are warranted.

Keywords

Antiperoxidative Activity; Cytokines, Inflammation; Protein kinase C; Isozymes, Translocation

02 Conference Track

- **Environmental Sciences**
- **Plant/Soil Sciences**

Session Chairs:



Prof. Dr. Rubina Hanif
NIP, Quaid-i-Azam University | Pakistan



Prof. Dr. Osman Adiguzel
Firat University, Elazig, Turkey



Dr. Zaiton Sapak
Universiti Teknologi MARA | Malaysia



Scientific and Engineering Aspects Shape Reversibility in Shape Memory Alloys

Presenter

Prof. Osman Adiguzel

Osman Adiguzel

Firat University, Department of Physics, Elazig, Turkey

Type

Oral Presentation

Track

Environmental
Sciences

Abstract

Some materials take place in class of smart materials with adaptive properties and stimulus response to the external changes. Shape memory alloys take place in this group by exhibiting dual thermoelastic and Superelastic characteristics. These alloys are very sensitive to external conditions, and phase structures turn into other crystal structures by lowering temperature and stressing in atomic scale, and shape of materials change with these processes. Lattice vibrations and interatomic potentials play an important role in the processing of transformation. Theoretical studies are focused on simulation techniques. Molecular dynamics (MD) simulations are important techniques in the solid material studies and based on the solution of Newtons equations of the system. Interatomic potential functions are essential and play a key role in the progress of the method. In this method, a molecular dynamics cell (MDC) is constructed as a model; initial values of the physical parameters and boundary conditions are imposed. These alloys have shape reversibility, and shape of material cycles between original and deformed shapes at different condition. Shape memory effect is initiated by cooling and deformation the material and performed thermally on heating and cooling after first cooling and stressing treatments. Therefore, this behavior is called thermoelasticity. This deformation is plastic deformation, with which strain energy is stored in the material and released on heating by recovering the original shape. Superelasticity is performed in only mechanical manner, by stressing and releasing the material at a constant temperature in parent phase region and recover the original shape simultaneous and instantly on releasing the external forces. These alloys are used shape memory elements in many fields from biomedical to the building industry. These phenomena are result of crystallographic or structural transformations in the materials, called martensitic transformations, by which crystalline structure of the material change. Shape memory effect is governed by successive thermal and stress induced martensitic transformations. Thermal induced martensitic transformation occurs on cooling along with lattice twinning and ordered parent phase structures turn into twinned martensite structures; these twinned structures turn into detwinned martensite structures by means of strain induced martensitic transformation with deformation in martensitic state. Superelasticity is also the result of stress-induced martensitic transformation, and parent austenite phase structures turn into the fully detwinned martensite with the stressing. Superelasticity exhibits ordinary elastic material behavior, but it is performed in non-linear way; loading and unloading paths are different at the stress-strain diagram, and hysteresis loop reveals energy dissipation. Thermal induced transformations occur with cooperative movement of atoms by means of lattice invariant shears in $\langle 110 \rangle$ - type directions on $\{110\}$ - type planes of austenite. Copper based alloys exhibit this property in metastable β - phase region, which has bcc-based structures at high temperature

parent phase field. Lattice invariant shears and twinning are not uniform in these alloys and give rise to the formation of unusual layered complex structures, like 3R, 9R or 18R structures depending on the stacking sequences, with lattice twinning. The unit cell and periodicity are completed through 18 layers in direction z, in case of 18R martensite, and unit cells are not periodic in short range in direction z. In the present contribution, x-ray diffraction and transmission electron microscopy studies were carried out on two copper based CuZnAl and CuAlMn alloys. X-ray diffraction profiles and electron diffraction patterns exhibit super lattice reflections. Specimens of these alloys were aged at room temperature for a long term, and x-ray diffractograms taken during ageing show that diffraction angles and peak intensities changed. This result refers to the redistribution of atoms in diffusive manner

Keywords

Thermoelasticity; Superelasticity; Shape memory effect; Martensitic transformation; Lattice twinning; Detwinning



Biogas Potential Assessment of Cow Dung and Poultry Dropping Induced Electrolytically in an Anaerobic Digestion Condition

Presenter

Dr. Lasisi Kayode
Hassan

Type

Oral Presentation

Track

Environmental
Sciences

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Abstract

This study assesses biogas yielding potential of two soluble solid wastes in anaerobic conditions induced by electrolysis process. A uniform mixture of waste to water was adopted in mixing and feeding into digesters. Two were electrolytically induced while the other serves as control. The digestion was monitored for 40 d. The results show that biogas yield was initiated on day 2 in all the digesters with maximum yield of 0.0056 m³/kg VS added, and attained peak value on day 17 with 0.052 m³/kg VS added yield. Biogas production ended on day 34 and 35 in all the digesters. The highest biogas and methane yield were produced in the electrolytically induced digester D containing poultry droppings with cumulative volume percentage of 91.41% and 66.14% when compared with the control digester C having 85.19% and 58.19% respectively. The least biogas and methane yield occurred in digester A with cumulative volume percentage of 71.64% and 43.83% respectively. Modified Gompertz equation was further used to fit the experimental result and was found suitable to model daily biogas yield as a function of digestion time. Conclusively, poultry droppings induced electrolytically have great potential for more biogas yield compared to cow dung both in control and induced state.

Keywords

Anaerobic digestion; Biogas; Digesters; Electrolysis; pH; Temperature



Nitrogen and Phosphorus remediation by Microbial Strain

Presenter

Dr. Santosh Kumar
Karn

Santosh Kumar Karn and Anne Bhambri

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Type

Oral Presentation

Abstract

The bioremediation of beverage effluent was investigated in the current study by using the potential strains of *Bacillus* sp. (BK1) and *Aspergillus* sp. (BK2). Effluent was collected from the beverage industry (initial concentration of nitrogen was 3200 ± 0.5 mg/L whereas phosphorus was 4400 ± 2 mg/L). BK1 and BK2 exhibited high removal competence within 1 week of incubation; BK1 removed phosphorus $99.95 \pm 0.7\%$ while nitrogen removed about $99.90 \pm 0.4\%$ by BK1 and $81.25 \pm 0.8\%$ by BK2 (initial concentration of phosphorus 4400 ± 2 mg/L and nitrogen 3200 ± 0.5 mg/L). The physiochemical composition of sample such as pH, total carbohydrates, total proteins, and total solids of effluent were also analyzed before and after treatment of both the samples. BK1 and BK2 increased the pH by 8.94 ± 0.3 and 9.5 ± 0.4 correspondingly in effluent. Total Carbohydrates removed about $17,440 \pm 4.6$ mg/L and $10,680 \pm 3.2$ mg/L by BK1 and BK2 correspondingly in treated effluent while BK1 and BK2 removed total proteins by 30.336 ± 4.6 mg/L and 40.417 ± 2.3 mg/L correspondingly in treated effluent. Next, total solids removed by BK1 and BK2 2.5 ± 0.3 mg/L and 1.6 ± 0.6 mg/L correspondingly in treated effluent. Both the strains BK1 and BK2 are highly efficient in the nitrogen and phosphorus removal therefore this strain may be applied for the potential remediation.

Track

Environmental
Sciences

Keywords

Nitrogen; Phosphorus; Bioremediation; Aquatic; Soil; Microorganism



Water Memory and Solar Activity

Presenter

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Type

Oral Presentation

Abstract

In June 1988 a remarkable report by Dr. Jacques Benveniste and his associates was published stating that water is capable of memorizing the structure of dissolved anti-LgE antibody and retaining its biological effectiveness after strong dilution (by factor as great as 10120). However, this phenomenon still cannot be reliably confirmed because it is not always reproducible. This instability is accounted for by another fundamental phenomenon recently discovered. The variations of solar activity and distribution of solar energy due to the rotation of the Earth around its axis and around the Sun exert a strong influence on the self-organization of water molecules. As a result, the stability of water clusters and the rate of hydrolytic processes with the participation of water clusters display diurnal, very large annual variations, and is also modulated by the 11-year cycles of solar activity. This phenomenon is well accounted for by the influence of muons on water clusters stability. Muons are generated in the upper atmosphere by the solar wind. For this reason, the water memory can manifest itself only at low solar activity when water clusters are more stable. The rate of hydrolytic processes on the Earth depends on the geographic latitude and should be different at the same time in the Northern and Southern Hemispheres, because of different distribution of solar energy between them. Therefore, measurements of the rate of hydrolysis of triethylphosphite in different places can provide important information about the influence of space weather on the Earth, and at the equator where there should be no seasonal differences such measurements may become an independent method for assessing solar activity. The dependence of self-organization of water molecules on the variations of solar activity exerts a strong influence on all forms of life and underlies the biological circadian, circannual and 11-year rhythms. 1. Shevchenko, I.V., Self-organization of water molecules over 11-year solar cycle. Research Square 2021. <https://doi.org/10.21203/rs.3.rs-658861/v1> 2. Shevchenko, I.V., Influence of solar activity on water clusters. Annual variations 2015-2019. ChemRxiv 2020. <https://doi.org/10.26434/chemrxiv.12407288.v1> 3. Shevchenko, I.V., Influence of solar energy on self-organizations of water molecules. Diurnal, annual, and 11-year variations. Reports of the National Academy of Sciences of Ukraine No 6. 61-66 (2019).

Track

Environmental
Sciences

Keywords

Water; Memory; Clusters; Solar activity; Solar cycle; Muons; Hydrolysis



Analysis of Food and Feeding of Selected Species of Brachyuran Crabs from Andaman and Nicobar Islands

Presenter

Dr. S. Kumaralingam

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Type

Oral Presentation

Abstract

The studies on the feeding habits of brachyuran crab living in the marine ecosystem are of great importance for the understanding of biotic relationships among such organisms. Crabs include the filter feeders, sand cleansers, mud, plant and carrion feeders, predators, commensals, and parasites (Dall and Moriarty, 1983). Crabs occupy many different niches and inhabit many different habitats in a variety of geographical areas and are reflected in the variety of food consumed by them. (Chande et al., 1999; Kyomo, 1999; Bryceson and Massinga, 2002). Data collection was made from 2013 to 2014. Two selective sites were chosen to collect samples, particularly at Karmatang beach in North Andaman and Shastry Nagar in Great Nicobar Island. A total of 160 specimens of brachyuran crabs were examined, for the food analysis the cardiac stomach of each specimen was dissected out the content fixed in 5-10% formalin. The analysis it was found that the percentage frequency of occurrence of crustaceans (80%), Mollusca (70%), Polychaete (65%), Algae (60%), and unidentified prey items (55%) was recorded in *Percnon planissimum* and *Luniella pugil*. This study observed that the *Percnon planissimum* (0.80) frequency occurrence rate was high as compared with *Thalamita danae* (0.50). The outcome of the research concludes with two species (*Percnon planissimum*, *Luniella pugil*) entirely different modes of feeding methods based on their feeding components observed in stomach content analysis. Significantly they refuse or scavenge on the surrounding coral reef environment by feeding dead organisms and debris.

Track

Environmental Sciences

Keywords

Andaman and Nicobar Islands; Brachyuran; Coral reef environment; Great Nicobar Island; North Andaman



New Analytical Method to Do Reservoir Characterization by Using Geological, Reservoir and Core Data

Presenter

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Type

Oral Presentation

Track

Environmental
Sciences

Abstract

Structural delineation is the main issue in the evaluation of carbonate reservoirs in structurally complex areas. Getting to the Asmari reservoir is not so easy in some cases due to structural complexities, where there is a thick pile of evaporites of Gachsaran formation over the reservoir. In some wells, higher than the expected thickness of formations is found. Dip classification based on a geological log has the advantage of providing a direct representation of structural origin and identify Asmari fault and fracture systems and its influence on production and resolve structural complexity. A similar approach is needed for delineating and characterizing the reservoirs in the subsurface. The large scale subsurface features are delineated with the surface seismic (2D and 3D) techniques. However, the coarse resolution (generally greater than 10 m) of these techniques does not allow to use them for feature identification of smaller scales (for instance, cross bedding, bedding, fractures, vugs/moulds, etc.), that are very useful for detailed characterization of reservoir rocks. In this study, a combination of dip analysis tools is used to determine the structural dip. Structural dip by definition is the present day formation dip used to build the structural cross-section. Apart from structural analysis, the investigation of fractures is the main application for image logs in Dezful Embayment. Information on fractures is important to know because of their higher permeability, hence their biggest influence on reservoir producibility. To develop an accurate structural model for Asmari reservoir by interpreting dip attribute in Struview module of Geoframe software as input data for permeability analysis from FMI and mobility analysis from OBMI. This project helped to resolve structural complexity, thus provided the exact location of the well in the reservoir, which could not reach the lower contact of the reservoir.

Keywords

Structural complexity; Borehole imaging technique; OBMI-UBI; Bedding dip; Well trajectory



Evaluation of the Efficacy of Indigenous Botanical Extracts as Growth Inhibitors Against *Tribolium Castaneum*

Presenter

Prof. Shaukat Ali

Said-ud-Din¹, Shaukat Ali¹, Muhammad Arshad² and Salar Ali³

Type

Oral Presentation

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Track

Environmental Sciences

Abstract

This study was attempted to assess the toxic efficacy of three plants extracts Chenopodium botrys (C.B), Carthamus tinctorius (C.T), Mentha royleana (M.R) and their mixed solutions against Tribolium castaneum in laboratory environments by filter paper impregnation process. Selected concentrations for each mixed plants were 5 %, 2.5 %, 1.25 %, 0.63 % and 0.315 % which are then transformed into $\mu\text{g}/\text{cm}^2$ for more estimations. After the transformation the values perceived as 1273.88 $\mu\text{g}/\text{cm}^2$, 636.94 $\mu\text{g}/\text{cm}^2$, 318.47 $\mu\text{g}/\text{cm}^2$, 160.5 $\mu\text{g}/\text{cm}^2$, 80.25 $\mu\text{g}/\text{cm}^2$ were tested for 24, 48, 72, 96, 120, 144 and 168 hours separately. The percentage mortality for each single and mixed extracts was acquired. Maximum mortality (78.14%) was perceived by the single extract of M. royleana treated with 1273.88 $\mu\text{g}/\text{cm}^2$. While lowermost mortality (17.14%) was gained by single extract of C. tinctorius treated with 80.25 $\mu\text{g}/\text{cm}^2$. Single plants extract of M. royleana (66.66 %) decreases the level of alkaline phosphatase and decreases (59.94%) the level of acid phosphatase. It is concluded that the single plant extract of M. royleana is more lethal and active as compare to the other single and mixed extracts.

Keywords

Efficacy; Botanical extract; Growth inhibitor; *Tribolium castaneum*; Gilgit



Species Suitability and Challenges of Mud Crabs Farming: An Alternative Sustainable Livelihood Approach for the Marginalized Communities in Sundarban, West Bengal, India

Presenter

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Type

Oral Presentation

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Track

Environmental
Sciences

Abstract

This study examines the prospects of crab culture as an alternative livelihood sustainable development perspective for the marginalized communities in Sundarban, West Bengal, India. The Sundarbans (name derived from the abundance of local Sundari tree (*Heritiera fomes*) is a mangrove-dominated deltaic ecosystem formed at the confluence of the Ganges, Brahmaputra, and Meghna Rivers. It is the world's largest coastal wetland, Ramsar site, and world heritage centre. It is a remote area and the villagers live in a harsh and stressed environment. The remoteness and inaccessibility of this zone are some of the factors for the poor development of the region. The study was conducted mainly in 4 zones of Sundarban and most of the respondents were from Matla, Sagar, Raimangal. and Saptamukhi zone. Mainly orange mud crabs were observed in the survey site (*Scylla olivacea*). Data were collected and analyzed from a semi-structured questionnaire, the survey indicated that mainly male villagers are attached to mud crabs rearing or collection process and most of them prefer chamber process for rearing mud crabs. Most of the respondents had had their fisheries, few of them rear crabs without any specific zone and some of them collected from the riverside. Profitability Index (PI) and benefit-cost ratio (BCR) reveal that mud crab farming can be a profitable alternative for the disaster-prone people of Sundarban. There is vast scope for sustainable development of brackish aquaculture in Sundarbans to meet the livelihood demand utilizing the unused and underused farming practices. However, mud crab farming is associated with some glitches due to a lack of technological innovations and awareness among the farmers. Challenges faced by Sundarbans aquafarmers need to be tackled by appropriate management tools, technology advancement, participatory planning, and capacity building.

Keywords

Sundarbans; Aquaculture; Sustainable livelihood approach; Profitability Analysis; Cost Benefit Ratio



Trends in Plant Ecology Research in Ethiopia (1969-2019): Systematic Analysis

Presenter

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Type

Oral Presentation

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Track

Environmental
Sciences

Abstract

The progress of plant ecology research in Ethiopia is not known to date. Consequently, it is challenging to judge the impact of existing research on policy development and conservation actions. The objective of this paper was to systematically analyze the trend of plant ecological research in Ethiopia. The inclusion and exclusion of the articles for analysis were performed using Reporting Standards for Systematic Evidence Syntheses (ROSES) flow diagram developed for systematic review/meta-analysis. The number of articles published, authors, and collaboration has increased dramatically since the 1960s. Most of the research (52.6%) focused on the Dry evergreen Afromontane Forest and grassland complex (DAF) and Moist evergreen Afromontane Forest (MAF) vegetation types. Of the remaining vegetation types, the woodlands (14.3%) i.e. Acacia-Commiphora woodland and bushland proper (ACW), and Combretum-Terminalia woodland and wooded grassland (CTW), desert and semi-desert scrubland (DSS) (2.3%), and the Afroalpine (AA) and Ericaceous Belt (EB) (1.5%) received comparatively little attention. Classical plant ecology themes, descriptive plant community studies, were dominant over the last five decades in contrast to contemporary themes globally. Other plant ecological studies such as reproductive and dispersal ecology of invasive plant species, and pollination ecology seem to be largely neglected topics. Furthermore, the recommendations forwarded by most of the articles reviewed (38.1%, n = 51) were not result-based. As a future direction, the Ethiopian government should develop a project database for both completed and ongoing projects.

Keywords

DAF; MAF; Research syntheses; ROSES; Systematic review; Vegetation ecology



Economical and Sustainable Utilization of Different Agroindustrial Wastes for Production of Bacterial Maltase

Presenter

Dr. Muhammad Asif
Nawaz

Type

Oral Presentation

Track

Environmental
Sciences

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Abstract

The biodegradable agro-industrial wastes are mostly considered as potential sustainable source for the production of various value-added products from microbial species. Due to easy availability and economical profitability, agro-industrial wastes are preferred for large-scale production of enzymes and also to improve microbial cell growth. The hydrolytic enzymes can selectively hydrolyze the internal linkages of complex carbohydrates to release glucose moieties which can be further utilized in different industrial bioprocess. In the current study, sweet potato peel (*Ipomoea batatas*) was observed as the most favorable substrate for the maximum synthesis of α -1, 4-glucosidase among various agro-industrial wastes. *Bacillus licheniformis* KIBGE-IB4 produced maximum quantity of α -1, 4-glucosidase when growth medium was supplemented with 1% substrate. It was evident from the results that bacterial isolate secreted high titer of α -1,4-glucosidase in the presence of peptone, yeast extract and meat extract with optimum concentration of 0.4%, 0.1% and 0.4% respectively. *Bacillus licheniformis* KIBGE-IB4 revealed maximum enzyme productivity at 40°C and pH-7.0 after 48 hours of fermentation period. An improved and cost effective growth medium design resulted 570.63±28.53 U mg⁻¹ of α -1,4-glucosidase from *B. licheniformis* KIBGE-IB4. This enzyme can be used to fulfill the accelerating demand of food and pharmaceutical industries. Further purification and immobilization of this enzyme can also enhance its utility for various bioprocesses.

Keywords

Saccharification; Sweet potato peel; Agro-industrial waste; Alpha-1,4-glucosidase; Production; Optimization



Bioaccumulation of Lead and Nickel using Fenugreek (*Trigonella foenumgraceum L.*) in Highly Contaminated Soil

Presenter

Dr. Leela Kaur

Leela Kaur

Maharaja Ganga Singh University, India

Type

Oral Presentation

Track

Environmental
Sciences

Abstract

Agricultural soil pollution is very common nowadays. Such soil needs to be treated by a clean, green and sustainable remediation technology like phytoextraction. Plants have been used in the remediation of metals. The present paper assesses bioaccumulation of lead and nickel by fenugreek (*Trigonella foenumgraceum L.*) in highly contaminated soil. Pot experiments were set up. Fenugreek was treated with higher concentrations of lead and nickel (100 to 800 mg/l). Harvesting was done at pre-flowering, flowering and post-flowering stages. Morphological parameters of fenugreek were estimated such as germination and survival percentage, plant weight, root and shoot length, number of branches and number of leaves. The effect of lead and nickel on the content of chlorophyll, proline, protein and total soluble sugar were also investigated. The concentrations of Pb and Ni in plant and soil samples were determined by Inductively coupled plasma-optical emission spectrometer (ICP-OES). It was found that effect of lead and nickel on various morphological parameters were concentration dependent. The maximum dry weight of fenugreek was found 4.0 ± 0.52 g in control plants and the minimum dry weight was 1.36 ± 0.05 g (400 mg/l Pb treated plants). Overall, dry weight of Ni treated plants was greater than Pb treated plants and combined (Pb+Ni) treated plants. Total chlorophyll content declined with increasing concentrations of lead and nickel. The proline content in fenugreek plants was increased at the higher concentrations of Pb and Ni because of heavy metal stress on fenugreek directing to the activation of defence mechanisms. Fenugreek accumulated Pb and Ni and further translocated them in the harvestable parts of the plants. Bioaccumulation of lead and nickel was higher in roots as compared to shoots. The highest Pb and Ni accumulation was noticed in combined Pb+Ni treated plants. However, the lowest Pb and Ni accumulation was found in Pb alone and Ni alone treated plants.

Keywords

Bioaccumulation; Lead; Nickel; Fenugreek and contaminated soil



Evaluation of Biochemical Changes During Post-harvest Deterioration of (*Hibiscus sabdariffa*) Roselle calyx

Presenter

Mr. Abubakar Abdullahi Lema

Abubakar Abdullahi Lema and Hasima Mahmud

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Type

Oral Presentation

Abstract

The ephemeral *Roselle calyx* and anthocyanin decay quickly and become brown. Anthocyanin stability is affected by pH, temperature, light, and postharvest enzymes. When the seed was removed, the calyx was injured, resulting in stress and microbial deterioration. Despite this, anthocyanins help stressed plants. This study evaluates Biochemical response during postharvest deterioration of roselle. Total Anthocyanin Content (TAC), hydrogen peroxide H_2O_2 , enzymatic antioxidant and non enzymatic antioxidant were determined, as well as polyphenol oxidase (PPO), and phenylalanine ammonia-lyase (PAL). The findings revealed that the TAC TPC and TFC were significantly higher at ($p \leq 0.05$), from 0 hours to 4 days. Both Catalase (CAT), Guaiacol Peroxidase (POD), and Ascorbate Peroxidase (APX) were expressed at significantly higher concentrations for 1 hour and 1 day, leading to a reduction in H_2O_2 concentration. Still, at 3-5days post deterioration, the enzyme activity significantly decreased drastically or depleted; this indicates that anthocyanin played a role in activating antioxidant enzymes in response to stress during *Roselle calyx* deterioration. We have also reported the biochemical changes during deterioration of *Roselle calyx* for the first time. Therefore, anthocyanin might be the potential deterioration biomarker in roselle.

Track

Plant/Soil Sciences

Keywords

Antioxidant; Deterioration; Enzyme; Postharvest; Roselle



Impact of Organic Sources, Phosphorus and Beneficial Microbes on Growth, Productivity and Profitability of Maize-Wheat and Soybean-Wheat Cropping System

Presenter

Dr. Imran

Imran

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Type

Oral Presentation

Abstract

Low soil organic matter and phosphorous (P) unavailability in soil are some of the major factors responsible for reducing soil sustainability, crop productivity and profitability under different cropping systems in Pakistan. Application of different organic sources alone or in combination with inorganic P-fertilizers and beneficial microbes has the potential to improve soils fertility and productivity. Field experiments were conducted at the Agriculture Research Institute (ARI) Mingora Swat under two important cropping systems i.e. soybean-wheat (S-W) and maize-wheat (M-W) of the study area for two consecutive years (2018-19 & 2019-20). The impacts of three peach based organic sources (dry based residues, compost and biochar), three P levels (50, 75 & 100 kg ha⁻¹) and two beneficial microbes [phosphate solubilizing bacteria (PSB) and Trichoderma (fungi)] was investigated on the growth parameters, yield and yield components, and profitability of soybean and maize crops, and their residual effect on the subsequent wheat crop under S-W and M-W cropping systems. The results revealed that application of organic sources, phosphorus levels and beneficial microbes had significantly improved the productivity and profitability over control under both cropping systems. Among the organic sources, applications of biochar and compost were found more beneficial in terms of higher yield, yield components and net returns than dry based residues in both cropping systems. Among the P levels, application of 75 kg P ha⁻¹ was found most suitable level under S-W system, whereas application of 100 kg P ha⁻¹ was better dose under M-W system. In both cropping systems, application of Trichoderma improved growth, yield components and net returns over PSB. It was concluded that integrated use of biochar + 75 kg P ha⁻¹ along with Trichoderma improved the productivity and profitability under the S-W cropping system. Application of biochar + 100 kg P ha⁻¹ along with Trichoderma was recommended for higher productivity and profitability under the M-W cropping system.

Track

Plant/Soil Sciences

Keywords

Organic sources; Carbon sequestration; Biochar; Compost; Nutrients replenishment; Plant biomass management; Beneficial microbes; Phosphorus



Trichoderma asperellum as Biological Control Agent against Black Rot Pathogen in Pineapple var. MD2

Presenter

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Nurul Farhana Mat Hayin and Zaiton Sapak

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Type

Oral Presentation

Track

Plant/Soil Sciences

Abstract

Postharvest losses of fresh fruits are a common problem in developing countries including Malaysia. One prominent factor contributing to the losses of fresh fruits is a pathological disorder caused by pathogenic microorganisms. Black rot disease of pineapple is a postharvest disease caused by *Ceratocystis paradoxa*. This pathogen could tremendously shorten the shelf-life of MD2 pineapple during transportation and storage by making the flesh disintegrated, watery rot, and eventually causing severe damage. The role of chemical pesticides in controlling postharvest diseases has been controversially debated. Therefore, the biological control approach is one of the alternatives to control postharvest diseases. In this study, biological control agents were screened against the black rot pathogen. A total of 17 isolates consisted of 13 different isolates of fungi, and four bacteria were isolated from asymptomatic MD2 pineapple leaves and fruit. The antagonistic activities of 17 isolates against *C. paradoxa* were evaluated using a dual culture test. The most promising isolate with a Percentage Inhibition of Radial Growth (PIRG) value of 97.5% was confirmed as *Trichoderma asperellum* (JX913783.1) using ITS rRNA gene. The assessment of disease severity index and disease progression analysis on MD2 pineapple fruits were evaluated at room temperature, $25 \pm 2^\circ\text{C}$. After ten days, pineapples inoculated with *C. paradoxa* alone exhibited 100% severity index, 7.66 AUDPC units², and 0% disease reduction, pineapples dipped into 10^9 CFU/mL spore suspension of *T. asperellum* alone exhibited 0% severity index, 0 AUDPC units², and 100% disease reduction, pineapples inoculated with *C. paradoxa*, followed by dipping into 10^9 CFU/mL spore suspension of *T. asperellum* after 4 hours (curative) exhibited 100% severity index, 6.22 AUDPC units², and 18.83% disease reduction and pineapples dipped into 10^9 CFU/mL spore suspension of *T. asperellum*, followed by the inoculation of *C. paradoxa* after 4 hours (preventive) exhibited 66.70% severity index, 4.56 AUDPC units², and 40.57% disease reduction. The findings revealed the application of 10^9 CFU/mL spore suspension of *T. asperellum* 4 hours prior to the inoculation of the pathogen was effective to prevent black rot disease in MD2 pineapples. This suggested the application of biological control agents prior to infection begins to increase its effectiveness against the postharvest pathogen(s).

Keywords

Biological control; *Trichoderma asperellum*; Black rot; Pineapple



Yield Disparity on the Response of Long Term Chemical Fertilization and Organic Amendment in Rice-Wheat System in Bara, Nepal

Presenter

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Abhisek Shrestha¹, Mitali Sah² and Bharti Thapa¹

Type

Oral Presentation

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Track

Plant/Soil Sciences

Abstract

Over use of fertilizers without considering the native soil fertility and declined trend of organic matter incorporation are some of possible factors affecting the crop productivity and soil fertility. Limited arable land with increasing demand, therefore, the maintenance of soil fertility will be essential to improve and sustain yields. Therefore, this experiment was conducted from 2014 to 2018 and the design used was Randomized Complete Block Design with 12 treatment replicated thrice including control plot, deficient/presence of NPK and amendment of organic matter through FYM and chopped straw; the cropping system was rice-wheat, Swarna Sub-1 and Gautam respectively. Annual rice and wheat yield attributes were found fluctuated over the years however, significantly higher was obtained in T11 (50:0:0NPK/ha+10t FYM/ha) followed by T9 and T6 which were recommended FYM and NK with omitted P respectively. For wheat, superior grain yield value was obtained in T11 (100:30:30 NPK kg/ha) as well whereas followers being T10 (100:30:30 NPK kg/ha) and T6 (100:30:30 NPK kg/ha) respectively. Here, treatments having both chemical fertilizer and organic amendment had increased the yield significantly without much fluctuation. Similarly, phosphorus application didn't show any significant impact on rice yield however, its requirement is crucial for wheat. Hence, application of organic amendments i.e. FYM @ 10t/ha with 50 kg N for rice can sustained the yield of wheat as well with recommended doses of chemical fertilizer alone and no FYM, thus concluding as amendment of organic matter in one system reduce huge use of chemical fertilizer for sustainable maintain of soil fertility and crop yield.

Keywords

NPK; Fertilizer; Rice; Wheat; Yield; Straw



The Impact of Soil Erosion on Crop Productivity and its Implication on Food Security in Southern Ethiopia

Presenter

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Type

Oral Presentation

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Track

Plant/Soil Sciences

Abstract

The study is undertaken in Kechabira Wereda Kambata Tambaro Zone, Southern Ethiopia. Geographically study area is located between 7o15' 30"N -7o 27 00"N latitude and 37o 31 30"E - 37o 51 30"E longitude. The study investigates the impact of soil erosion on the crop productivity and its implication on food security, Southern Ethiopia. Soil erosion is one of the unresolved problems of rural agriculture. Soil degradation in the form of soil erosion and soil fertility decline are the main problems of research area which have been influenced the environmental quality and productivity of land. Structured interview scheduled was used to collect primary data from 121 respondents. Findings revealed that most (91.7%) respondents are male. Most of respondents (47.9%) cannot read and write in their education status. Further, the majority of farmers (77%) earned annual income from sales of crops and animal production. Respondents also affirmed that a severity of soil erosion in the farm field is very great. Most of the study respondents also confirmed that over cultivation, cultivation of steep slopes, deforestation, over grazing, unreliable soil management practices and poor agricultural techniques are the main causes of soil erosion in the study area. About 91% of the interviewed households have observed changes (decline) in land productivity. According to majority of respondents (54%) the reasons for declining land productivity are occurrence of soil erosion and loss of soil fertility. Similarly the crop productivity per hectare for selected dominantly produced crops has been decreasing over 5 years between 2013-2017 cropping years. According to soil laboratory analysis, the soil of study area are characterized by moderately acidic, low category of OM and organic carbon content, low proportion of available phosphorus and very low to low range of total nitrogen. Most of the surveyed households are food in secured due to loss of agricultural productivity by soil erosion. It is recommended that combating the severity of soil erosion by applying a wide range of soil management practices and creating skillful awareness to farmers of the research area should be critically considered. Finally, more study on the issue of climate change impacts would be paramount.

Keywords

Soil erosion; Crop productivity; Food security



Growth and yield potential of Ginger as Influenced by Manure and Inorganic Fertilizer in Post Mined Soils

Presenter

Dr. Esther Mwende
Muindi

Muindi Esther Mwende¹, Wamukota Andrew Wekesa², Mulinge Jackson Muema¹, Okello Nick³, Wekesa Geoffrey³ and Hamza Ahmed³

Type

Oral Presentation

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Track

Plant/Soil Sciences

Abstract

Globally, mining is an important economic activity that promotes income generation, job creation, and industrialization. In spite its economic importance, it is classified as land degradation form that disrupts natural ecosystem through loss of biota and soil health. Paucity of information regarding the performance of reclaimed mined soils in supporting crop production abound in Kenya. To contribute to this knowledge gap, a study was conducted at Base titanium limited -Kwale to investigate the performance of ginger on rehabilitated mined soils. The experiment was laid out in a Randomized Complete Block Design (RCBD) and replicated three times. Treatments included: sole fertilizer, sole manure, fertilizer +manure and control. Data was subjected to analysis of variance (ANOVA) and regression analysis using R packages and means separated using the Fisher's protected least significant difference (LSD) at ($P \leq 0.05$). Results showed that the soils had low TN, exchangeable P, K, S, Bo and Cu levels. Manure+ fertilizer significantly ($P \leq 0.05$) increased plant height by 38%, number of leaves by 12%, yield by 89% and profits by 82% compared to control. A significant positive relationship between Nitrogen, phosphorus and potassium levels, manure, fertilizer, fertilizer+ manure with plant height, number of leaves and total yield was observed indicating that adequate levels of N,P,K applied in form of manure + fertilizer can support optimal ginger production in these soils. Further research is, required to ascertain the long term, ginger production approaches that promote sustainable soil development and yield.

Keywords

Ginger; Mining; Manure; Fertilizer; Land degradation; Reclamation



PROCEEDING ES 2022



Biotechnological Innovations for Improving Resource Use Efficiency in Agriculture: Priming Story

Presenter

Dr. Amitava Rakshit

Amitava Rakshit

Banaras Hindu University, India

Type

Oral Presentation

Track

Plant/Soil Sciences

Abstract

Agriculture in times to come is confronted by growing global insist for food, shortage of arable lands, and resources besides numerous environment stress, needs to be administered smartly through sustainable and ecofriendly approaches. biotechnological tools is recognized globally as drivers of increased crop productivity and efficiency. Microbial-based bioformulations that increase plant performance are greatly needed, and in particular bioformulations that exhibit complementary and synergistic effects with inorganic inputs. Over the past decades, there has been increasing evidence demonstrating that among the available options , on-farm seed priming is a simple, proven technology that has been an age old practice, tested, and refined in laboratories, in experimental plots, and by farmers themselves in their fields. The priming-caused potentiation of plant defense responses frequently has been associated with enhanced resistance to various biotic or abiotic stresses and it is easy to use with a wide range of crops in many different farming conditions. Although priming with water or tiny amounts of phosphorus, boron and zinc is common but use of microbes can make a huge difference. Biopriming is becoming a potentially prominent technique to induce profound changes in plant characteristics and to encourage desired attributes in plants growth associated with fungi and bacteria coatings. Biological factors such as fungi and bacteria are used in biopriming which includes: fungi and antagonist bacteria and the most important of all are Trichoderma, Pesodomonas, Glomus, Bacillus, Agrobacterium and Gliocladium. Therefore, seed priming in combination with low dosage of bioinoculants has been used to improve the plant performance, stabilize the efficacy of relevant biological agents in the present set up of innovative agriculture and reducing dependency on chemical inputs and giving the farmer reasonable access to further benefits.

Keywords

Biopriming; Resource use efficiency; Biotechnology; Sustainability



Evaluation of Botanical Extracts on Leaf Blight Disease of Sunflower (*Helianthus annuus*) caused by *Alternaria helianthi* (Hanford)

Presenter

Mr. Edet Iwebaffa
Amos

Edet Iwebaffa Amos¹, Oyeanusì Hillary C.², Arogundade Olawale² and Akinbode Oluwafolake Adenike³

Type

Oral Presentation

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Track

Plant/Soil Sciences

Abstract

Sunflower is the world's fourth-largest oil-seed crop and its seeds are used as food. In Nigeria, its production in commercial quantities is constrained majorly by fungal diseases, especially the *Alternaria* Leaf Blight (ALB) disease of sunflower. Therefore, a study was conducted to evaluate the effect of three botanical extracts and SAAF (12% CARBENDAZINE+68% MANCOZEB) on Leaf blight disease of Sunflower (*Helianthus annuus*) variety (Favorit) caused by *Alternaria helianthi* planted in the Research Farm of Institute of Food Security, Environmental Resources and Agricultural Research (IFSERAR) of the Federal University of Agriculture, Abeokuta (FUNAAB), (Latitude 07°15N, Longitude 03°25E) during the wet season (May-August) 2018 and dry season (September to November 2019). Fresh leaves of gmelina and goatweed plants were collected and air dried for seven days. The dried leaves were crushed into powder form using an electric blender (Emel-242, China) and bottled in an airtight container. A total of 200 g of leaf powder was weighed into 200 ml of distilled water (w/v) and was allowed to stay for 72 hours to obtain the sap. A total of 100 mls of the sap was diluted with 900 ml of distilled water (v/v) (i.e 10%), and 5 drops of Tween -20 was added, mixed before spraying on the plant with a hand sprayer. The treatments were laid out in Randomized Complete Block Design with three replications for two seasons. Data were collected on disease incidence and severity as well as agronomic and yield parameters. Data collected were subjected to Analysis of Variance and means of significant treatments were separated using Duncan's Multiple Range Test at $P < 0.05$. The results showed that the goatweed and gmelina aqueous extract sprayed on the sunflower plant at 5,7,9 11 weeks after planting(WAP) was more effective in controlling the ALB disease of Sunflower with highest plant growth and enhanced leaf height recorded than in the unsprayed plot. The incidence and severity of the disease was observed to be significantly highest in the unsprayed plot at 11 WAP Hence, the botanicals extract used in this study should be further investigated to ascertain their active fungicidal ingredients.

Keywords

Botanicals, Fungicide, Sunflower, *Alternaria* Leaf Blight, aqueous extract



Garden Cress seed (*Lepidium sativum*) Mucilage: Isolation, Characterization, and Evaluation as a Pharmaceutical Excipient with Disintegrant Activity

Presenter

Mr. Abikesh Prasada
Kumar Mahapatra

Abikesh Prasada Kumar Mahapatra¹ and P.N. Murthy

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Type

Oral Presentation

Abstract

In the current research, an attempt has been made to extract seed mucilage of *Lepidium Sativum*. Screening of different methods and techniques; have been carried out, and a user-friendly and cost-effective method was identified. The present investigation helps to understand the inherent properties of seed mucilage of *Lepidium Sativum* that enables its use in different pharmaceutical formulations as excipient with disintegrant activity. It also facilitates use as an alternative of synthetic excipients employed in different pharmaceutical formulations. The extracted mucilage was subjected to different phytochemical screening tests. The swelling index and the fast water absorption capacity of the prepared mucilage help to show the required disintegration activity and it can be used as a disintegrant. Ideally larger particle size usually fastens the disintegration activity. The larger particle size of the extracted mucilage also promotes the disintegrant activity and enables it to be used as a good disintegrating agent. A cost-effective extraction and isolation process was established by boiling *Lepidium Sativum* seeds in water, blending by hand blender, and using acetone as a solvent. All desired critical quality attributes required to use the extracted mucilage as an alternative for synthetic excipients were evaluated and each attribute was discussed. The evaluated physicochemical properties of isolated mucilage signify that it is having the potential properties of a good disintegrant. Thus, it can be used as a disintegrant in pharmaceutical formulations. From the sublingual tablet formulation study, it was observed that the final selected formulation with seed mucilage of *Lepidium Sativum* as a disintegrant was comparable with a synthetic super disintegrant croscarmellose sodium. The slower initial release profile at 5 minutes in formulation with 20 mg of seed mucilage of *Lepidium Sativum* as a natural disintegrant is might be due to the delayed dispersion time, disintegration time, and wetting time. The disintegrant activity of the extracted mucilage was scientifically discussed with different parameters such as swelling index, water absorption capacity, and particle size. The study demonstrated that seed mucilage of *Lepidium Sativum* extracted by using an economic extraction process and characterized in a systematic approach could be effectively used as an alternative to synthetic excipients in different pharmaceutical formulations as a disintegrant.

Track

Plant/Soil Sciences

Keywords

Natural disintegrant; Garden cress seeds; *Lepidium sativum*, Pharmaceutical excipients; Sublingual tablet; Asenapine Maleate



Plants Act As Natural Lungs of Environment on Surface of the Earth In Changing Climate

Presenter

Dr. Muhammad Kabir

Muhammad Kabir¹, Um e Habiba², Muhammad Zafar Iqbal³, Muhammad Shafiq³, Zia-Ur-Rehman Farooqi³ and Wali Khan⁴

Type

Oral Presentation

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Track

Plant/Soil Sciences

Abstract

All organisms are normally affected indirectly or directly due to different types of environmental pollution which is continuously resulting in climate change. Industrial activities, urbanization and greenhouse effects are the major sources of the climatic change globally. The effects of climate change include losses of biodiversity, rise in sea level, changes in the weather pattern and an enhance in extreme weather conditions such as droughts and floods, melting of glaciers and various health issues. It is key alarming that has been influencing health of human, plants and animals. In 2014, the World Health Organization (WHO) predicted that climatic change would lead to about 2,50,000 extra deaths each year between 2030 and 2050. It will cause by different factors such as habitat loss, heat stress and malnutrition, etc. The concept of green revolution stands on plantation activities by expanding afforestation, declining deforestation and overgrazing and such procedures enable to benefit and protect the habitat, economy, people and planet. Plants use carbon dioxide (CO₂) and other toxic materials in their photosynthesis which are existing in the environment. It is a strategic pathway to build a sustainable future the principles of green revolution involve the development of green belts and use of nontoxic reagents. Many environmental activists have initiated concept of green revolution to gain the mitigation and adaptation strategies. The findings of present study showed that plantation activities should be focused on large scale for quality of environment. As plants are natural lungs of earth planet and release oxygen providing good quality of air. It will take time to build robust integrated air quality and climate mitigation regimes but that patience will be rewarded. In order to reduce problems related to climatic change, we have to reduce the different types of environmental pollution and to enhance the plantation activities to overcome the climatic change leading to destruction of habitat.

Keywords

Environmental quality; Climate change; Pollution; Green revolution; Globe



Zinc and Iron Bio-fortification: Improving Protein Content of Rice

Presenter

Dr. Shahram Mahmoud Soltani

Shahram Mahmoud Soltani, Maryam Hossieni Chaleshtori, Kobra Tajaddodi Talab, Hassan Shokri Vahed and Maryam Shakouri Katigari

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Type

Oral Presentation

Track

Plant/Soil Sciences

Abstract

Compared to the other micronutrient fertilizers, amino acids chelated can significantly improve rice growth, increase grain yield, and macro and micronutrient contents of rice aerial tissues due to better uptake, higher efficiency, and nitrogen content. In this current project, we explored the effect of glycine amino acid chelated zinc and iron (introduced by Pak Gostar Company) on yield, grain bio-fortification, and macro and micronutrient contents of rice aerial tissues compared to zinc sulfate (chemical source). The current field experiment was conducted on the research field of the Rice Research Institute of Iran (RRII), Rasht, Iran during rice growing seasons of 2019-20. The 12 experimental treatments were conducted in a randomized complete block design with three replications on the most common Iranian local rice cultivar (Hashemi). The experimental treatments were the foliar application of 0.5, 1, and 1.5 kg ha⁻¹ of Zn and Fe glycine amino acid chelates and ZnSO₄ under recommended and 50% of recommended NPK application. The maximum increase percentage of Zn content of rice grain and head rice were observed by about 25.5 and 22 compared to control through 1 kg Zn ha⁻¹ foliar application of glycine amino acid chelated zinc compared to control, respectively. The Zn chelated by glycine amino acid was more effective than Zn sulfate by about 7 and 6% for Zn content of rice grain and white rice, respectively. The highest increase in Fe content of rice grain and head rice were observed by about 2.2 times and 17.5% compared to control 1 kg Fe ha⁻¹ through foliar application of Fe chelated with glycine amino acid compared to control, respectively. The Protein content of white rice is affected by both glycine chelated and sulfate of Zn by about 10 and 9%. The results indicated that sprayed Zn in the source of glycine amino acid was more effective than zinc sulfate for increasing measured rice quality traits.

Keywords

Glycine; Head Rice; Nutritional quality



Magneto-Priming: A Multi-Pronged Abiotic Stress Mitigation Approach

Presenter

Dr. Sananda Mondal

Sananda Mondal and Debasish Panda

Visva-Bharati University, India

Type

Oral Presentation

Track

Plant/Soil Sciences

Abstract

Seeds priming is a commercial successful technology from last 3-4 decades in terms of improved germination physiology, vegetative and reproductive growth, and the potential to protect the plants from various biotic and abiotic stress. It can be applied in both chemical and physical methods. One of the advance physical method of seed priming is Magneto-priming and it based on the principle of magnetism. The application of magnetic fields in seeds is eco-friendly, cost efficient, non-invasive technique having beneficial effects on germination percentage, seedling establishment and vigor, and increased crop yield. Literature suggested that static magnetic fields (SMF) ranging from 1.5 μ T to 250 mT if applied to different seeds lots were found effective at room temperature. Studies also depicted that SMF provide protection against heat stress, salt stress, drought, UV-B stress, and cadmium stress without adversely affecting the environment.

Keywords

Magneto-priming; Static magnetic field; Abiotic stress



PROCEEDING ES 2022



Global Scaffolds for Trace Metal Contaminant in Cannabis Products

Presenter

Prof. Louis Bengyella

Louis Bengyella

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Pennsylvania State University, PA, USA

Type

Oral Presentation

Abstract

The glandular hair-like structure called trichome in Cannabaceae plants is a functional scaffold for cannabinoids biosynthesis which represents commercial wealth. Qualitatively and quantitatively speaking, cannabis species are the most popular plant exhibiting a high level of usage plasticity that transcends medicinal chemistry, culinary chemistry, nutritional biochemistry, and agrochemical reports. The latter governs the production of the cannabis species and is recognized as the rate-limiting point that determines the quality of cannabis. The agrochemical level is the principal entering point for heavy metals (HMs) contaminants when cannabis is grown on a contaminated substrate, fertilizer, and water. The principal HMs contaminant that transcends cannabis production to end-users with far-reaching socio-economy impact includes excessive uptake of lead (Pb), chromium (Cr), arsenic (As), zinc (Zn), cadmium (Cd), copper (Cu), mercury (Hg), and nickel (Ni) during cultivation. While the confectioneries industry could heavily benefit from cannabis cannabinoids, terpenoids, and derivatives, the inherent ability of cannabis to constitutively expressed HMs genes that facilitate phytoremediation, transportation, distribution, and homeostasis of HMs during cultivation calls for a rethinking of food safety in the confectionary arena. We discussed key elements that entangled cannabis to heavy metals at the agrochemical level and key elements to consider when buying cannabis derivatives for repurposing in the expanding confectionery space in the 2021 century.

Track

Plant/Soil Sciences

Keywords

Confectionery space; Cannabis; Food-security; Heavy metals; Cannabis plasticity



Environmental Risks of Low-Density Polyethylene (LDPE) and Biodegradable Plastic Films in Dryland Agriculture

Presenter

Prof. Youcai Xiong

Youcai Xiong

State Key Laboratory of Grassland Agro-ecosystems, College of Ecology, Lanzhou University, Lanzhou 730000, China

Type

Oral Presentation

Track

Plant/Soil Sciences

Abstract

Water is a major constraint on dryland agriculture, and for many years the use of low-density polyethylene (LDPE) plastic films to retain moisture in the fields has helped increase yields. However, the extensive use of LDPE also leads to the increasing content of residual film in soil. This has aroused peoples wide concern. The results showed that no matter what type of residual film was added, the higher the amount of residual film in soil, the more significant the effect on soil maize productivity and soil physical properties. Soil C/N decreased with the increase of residual film content. Microbial biomass C and N decreased with the increase of residues, while the microbial biomass C/N ratio did not change significantly after two years of landfill treatment. Membrane debris can physically inhibit crop root growth and soil capillary action. Therefore, it is very important to study the whereabouts of residual film in soil and degradable mulching film. In order to alleviate the problem of "white pollution" caused by LDPE film residue in farmland soil, biodegradable (Bio) plastic film is considered as a promising alternative to LDPE film. Two years of landfill test results showed that there was a difference in the degradation characteristics of LDPE film residue and Bio film residue. The degradation rate of LDPE residual film was zero, while the biodegradable film residual film was not completely degraded, and its degradation rate was 41.1%. The effects of LDPE residues on soil properties and productivity were lower than those of Bio residues to some extent, but the negative effects of LDPE residues on maize field soil were similar to those of Bio residues. The abundance of microplastics increased with the addition of residual film, and the increasing part was mainly the microplastics with degradation film properties. Therefore, we first determined the residual fate of bioplastic film in the agricultural ecosystem and revealed the Potential environmental risks of bioplastic film.

Keywords

Dryland agricultural; Ecosystem sustainability; Low-density polyethylene plastic films; Biodegradable plastic film; Potential environmental risks



Dietary Supplement of *Dregea volubilis* Extracts on Disease Resistance against *Aeromonas hydrophila* in Fresh Water Fish *Labeo rohita*

Presenter

Dr. N. Yogananth

Type

Poster Presentation

Track

Plant/Soil Sciences

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Abstract

Generally, contagious diseases are a serious problem in aquaculture, causing heavy loss to fish farmers. The employ of synthetic drugs and chemotherapeutics for the treatment of diseases can result in the development of drug-resistant bacteria, environmental pollution and residues in fish. The use of plant extracts in controlling fish diseases is new and emerging field which needs further researches to find out the most effective measures to replace chemotherapy. Hence, the present study is aimed to evaluate the immunostimulant potential of *Dregea volubilis* leaf, flower and fruit extracts in the fish *Labeo rohita*, post challenged with *Aeromonas hydrophila* by analyzing the body weight, feed consumption rate, hematological and immunological parameters. Fish were divided into 4 groups one received control diet, others 3 received *D. volubilis* leaf, flower and fruit were included in the experimental diets at the expense of 1.0% rice bran for 14 days. At the end of every two weeks 24hrs after feeding, fish were bled from caudal vein and blood samples were analyzed for some of hematological and immunological parameters. The results obtained from the study demonstrated that the fish fed with leaf, flower and fruit extracts of *D. volubilis* incorporated into feed significantly enhanced the body weight, feed consumption rate, specific antibody response, haemoglobin content, total RBC, total WBC, PCV, ESR, pathogen clearance and enzyme activity compared with the control group. The survivability was higher in the fish which consumed plant extract-incorporated feed, and the fish group fed with 1000 ppm diet showed highest percentage survival of the fish. These results indicate that *D. volubilis* stimulates the immunity and makes the freshwater fish *L. rohita* more resistant to *A. hydrophila*.

Keywords

Dregea volubilis; Immunostimulant; *Labeo rohita*; *Aeromonas hydrophila*



Biochar- A climate Smart Agricultural (CSA) Practice for Milling Traits and Aroma of Fragrant Rice under Drought Stress with Different Time of Harvest

Presenter

Mr. Rajesh
Chakraborty

Type

Poster Presentation

Track

Plant/Soil Sciences

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Abstract

The Farmers usually harvest aromatic rice at or beyond the full maturity stage and keep it in the field for quite a long time for drying in Bangladesh and due to lack of proper storage management the aroma does not retain for a long time. A pot experiment was conducted in the research area under the plastic net house of Sher-e-Bangla Agricultural University, Dhaka-1207 during the months from October 25, 2019, to April 10, 2020. BRRI dhan50 was used as planting materials. The experiment comprised of three factors viz., Factor-1 (Biochar-2 levels): B1 = (Control) 0.0 t ha⁻¹, B2 = 5.0 t ha⁻¹; Factor-2 (Drought stress-2 levels): D1= At reproductive stage, D2= At grain filling stage and Factor-3 (Time of harvest-3 levels): H1= 3 weeks after flowering (WAF), H2= 4 weeks after flowering (WAF) and H3= 5 weeks after flowering (WAF). A 2x2x3 factorial design was followed under the present study with 5 replications. Results revealed that the application of biochar along with drought stress and crop harvesting time has significantly influenced the maximum traits studied under study. Finally, it may be concluded that application of biochar @ 5tha⁻¹ along with drought stress imposed on grain filling stage and crop harvested 5 weeks after flowering has shown the best result for brown rice yield, head rice recovery, amylose content, protein content, grain aroma and taste of BRRI dhan50. The application of biochar also has shown an increased amount of soil organic carbon. So, from the present research, it may be said that biochar application is the way of reducing atmospheric carbon emitted from puddled rice soil in normal field conditions under climate-smart technology.

Keywords

Soil organic carbon; 2-AP; Taste; Flavor; Head rice recovery



Phenotypic Diversity of Eggplant (*Solanum spp*) Accessions Collected in Nigeria Based on Agronomic Traits and Nutritional Quality

Presenter

Dr. Kolawole, Adesike
Oladoyin

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Type

Poster Presentation

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Track

Plant/Soil Sciences

Abstract

Eggplant (*Solanum spp*) is an economically important crop with nutritional value and health benefits. To accelerate the development of improved varieties, it is imperative to assess the phenotypic variability among existing eggplant germplasm collection. The National Horticultural Research Institute (NIHORT), Ibadan, Nigeria holds a large germplasm collection of eggplant with limited information on their variability and utilization in breeding programmes. This study focused on under-utilized eggplant species (*S. aethiopicum* L., *S. gilo* L., *S. macrocarpon* L., *S. nigrum* L.) collected from the Institute's gene bank. The objectives of the study are to assess the magnitude of variability in the eggplant accessions with respect to agronomic traits, nutritional and physicochemical properties and identify divergent eggplant accessions with complementary traits which may be useful as parental lines for hybridization. In this study, 13 eggplant accessions and one commercial variety planted by farmers used as local check were laid out in a randomized complete block design replicated three times. The experiment was carried out at the Teaching and Research Farm of Ladoke Akintola University of Technology, Ogbomoso, Nigeria. Agronomic traits, nutritional and physicochemical parameters of the eggplant accessions were measured and data collected were analysed. The analysis of variance showed highly significant ($P < 0.001$) differences for 33 qualitative and quantitative characters. These variabilities indicate the possibility for selection and improvement. The significant ($P < 0.001$) correlation between traits signifies their importance as secondary traits, which is sufficient as a selection criterion. Principal component analysis indicated that the first six components with eigenvalue >1 contributed 87 % of total variability. Cluster analysis separated the accessions into five distinct clusters indicating divergence based on the traits measured. Accessions NHEP0074, NHEP0075, NHEP0079, NHEP0083 NHEP0476, NHEP0488 and NHEP0489 were identified as good sources of nutrients, minerals composition and fruit yield. These superior accessions with favourable alleles for yield and nutritional qualities may be useful as parental lines in eggplant breeding programmes.

Keywords

Breeding; Germplasm; Qualitative traits; Quantitative traits and Variation



Soil Organic Carbon Sequestration by Sown Pasture Species for Abandoned Cropland Restoration in Nepal

Presenter

Mr. Roshan Babu Ojha

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Type

Poster Presentation

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Track

Plant/Soil Sciences

Abstract

Abandoned cropland is a growing national problem that has significant impacts on the environment and food security. Restoration of abandoned cropland is a global concern and Nepal is also seeking effective ways to manage it. Pasture cropping in abandoned cropland is one of the alternatives that help to restore abandoned cropland primary productivity by increasing soil organic carbon (SOC) and fractions. We considered annual turnover of pasture roots and live root input from sown pasture contribute to increasing SOC and fractions in abandoned cropland. A field experiment, at Palungtar municipality Gorkha, was laid out in a completely randomised block design where four pasture species were grown with a control plot replicated four times in 2-year-old abandoned cropland. The change in SOC and fractions were predicted using mid-infrared spectroscopy. An increase in SOC and fractions after pasture cropping in abandoned cropland was recorded that corroborated with root biomass and density depth distribution. Pasture species confined to the most significant portion of their root biomass at 0-10 cm depth soil (80-88% of total root biomass) declined with increasing depth. Significantly higher SOC was recorded from 0-10 cm than 10-20 cm depth. After 20 cm, SOC started to increase but was similar to 0-10 cm. A similar trend of decrease and increase across soil depth was followed by humus organic carbon (HOC) and resistant organic carbon (ROC) fraction, however, particulate organic carbon (POC) fraction was found significantly higher in 0-10 cm depth that declined with increasing soil depth. The greater proportionate difference in 0-10 cm depth soil was found in POC. Overall, the increase in TOC was mostly attributed to HOC followed by ROC and POC as influenced by pasture cropping in abandoned cropland. Pasture crops potentially increase the SOC with an increase in stable carbon fraction at lower soil depths and labile carbon fractions at the topsoil. So, pasture cropping can restore the fertility of the soil by increasing SOC which should be considered as an important option in abandoned cropland restoration programs in Nepal and other parts of the world where abandoned cropland is an issue.

Keywords

Carbon fractions; Elusine; Land use change; Rhodes; Setaria; Themeda

03 Conference Track

- **Social Sciences**
- **Animal and Veterinary Sciences**

Session Chairs:



Dewi Syahidah, Ph.D.

Institute for Marine Research Aquaculture and Fisheries Extension | Indonesia



Dr. I Made Mudita

Udayana University | Indonesia



Dr. Prabhjot Kaur

Guru Nanak Girls College | India



Formulation of Liquid Bio-supplement Probiotic Utilize Lignocellulolytic Bacteria and its Effectiveness on Broiler Productivity

Presenter

Dr. I Made Mudita,
SPt., MP

I Made Mudita, I Wayan Sukanata, I Wayan Suberata, I Wayan Wijana, and I Nyoman Sutarpa Utama

Faculty of Animal Husbandry, Udayana University, Indonesia

Type

Oral Presentation

Abstract

The prohibition of the use of Antibiotic Growth Promoters/AGPs in the broiler farming livestock has resulted in various problems, especially a decrease in business productivity. Formulation and utilization of lignocellulolytic probiotic bacteria as a liquid biosupplement probiotic for broiler livestock as a substitute for AGPs is a strategy developed in this study. Ten (10) liquid biosupplement probiotics were produced in this study utilizing superior lignocellulolytic probiotic bacteria from the rumen fluid of Bali cattle and termites individually or in a consortium (P0, P1, P2, P3, P4, P5, P1234, P1235, P1245, P12345), namely (1) *Bacillus subtilis* strain BR4LG, (2) *Bacillus subtilis* strain BR2CL, (3) *Aneurinibacillus* sp. strains BT4LS, (4) *Bacillus* sp. strains BT4CL and (5) *Bacillus* sp. strains BT8XY. The quality of probiotics was evaluated based on nutrient content, bacterial population, and enzyme activity produced. Meanwhile, its effectiveness was evaluated based on the growth performance, carcass production and blood cholesterol profile of broiler. The results showed that the use of lignocellulolytic bacteria was able to produce liquid biosupplement probiotics with higher quality as indicated by the high of nutrients content, lactic acid bacteria population and lignocellulase enzyme activity of probiotic. Provision of probiotics for broilers is also able to increase broiler productivity, both performance, carcass production and improvement of broiler blood cholesterol profile. Probiotics that were formulated using 5 lignocellulolytic probiotic bacteria (P12345) produced probiotics with the best quality and effectiveness which could be a substitute for AGPs for broilers.

Track

Animal and Veterinary
Sciences

Keywords

AGPs; Broilers; Lignocellulolytic Bacteria; Probiotics; Liquid Biosupplements



Comparative and Deep Level Phylogenetic Analysis of Superfamily Noctuoidea (Insecta: Lepidoptera) using Complete Mitochondrial Genomes and their Phylogenetic Implications

Presenter

Mr. Muzafar Riyaz

Muzafar Riyaz¹, Rauf Ahmad Shah¹, Savarimuthu Ignacimuthu² and Kuppusamy Sivasankaran¹

Type

Oral Presentation

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Track

Animal and Veterinary Sciences

Abstract

Mitochondrial DNA (mtDNA) is small and circular and has 15000- 16,500 base pairs in it. Apart from playing a significant role in the pathways that are within the mitochondrion for producing energy, the mtDNA plays a very crucial role in the ecology and evolution of animal species including Insects. The Mitochondrial DNA is an excellent molecular marker in analyzing the studies of comparative and evolutionary genomics, molecular evolution, phylogenetics, and population genetics of animals. Mitochondrial genomes have been widely used to address phylogenetic questions in invertebrates particularly in insects. The insect mitochondrial genomes are commonly circular with about 14-19 kb long which contains 37 genes including 13 protein-coding genes (PCGs), 2 ATPase genes (atp6 and atp8), 3 cytochrome c oxidase genes 1-3 (cox1-cox3), 1 cytochrome B (cob), 7 NADH dehydrogenase genes (nad1-6 and nad4L), 2 ribosomal RNA (rrnL and rrnS) genes and 22 transfer RNA (tRNA) genes and adenine (A) + thymine (T)-rich region, which comprises the initiation sites for transcription and replication. For the phylogenetic inference among members of the superfamily Noctuoidea, we sequenced the mitogenomes of 36 species. The phylogenetic analysis based on the PCGs and two rRNAs revealed the perfect relationships of the species with other lepidopterans and selected outgroups from other insect orders using both Maximum Likelihood (ML) and Bayesian Inference approach and solved many problems in taxonomy and phylogeny of moths.

Keywords

Molecular Phylogenetics; Insect Molecular Biology; Mitochondrial DNA; Phylogenetic Tree Construction; Next Generation Sequencing



Susceptibility of Raw-Blue™ Isg Cell Cultures to Chequa Iflavirus And Athtab bunyavirus, From Stressed Redclaw Crayfish (*Cherax quadricarinatus*) from the Northern Queensland

Presenter

Dr. Dewi Syahidah

Dewi Syahidah¹, Jennifer Elliman² and Leigh Owens²

Type

Oral Presentation

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Track

Animal and Veterinary
Sciences

Abstract

The susceptibility of mouse macrophage interferon reporter cells a.k.a. RAW-Blue™ ISG cells to two RNA viruses (*C. iflavirus* and Athtab bunya-like virus) was evaluated. Six T75 flasks were used to culture the cells (5x10⁶ cells/ml) at 37°C until reached 70 % mono-layer. Virus inoculate (1ml) was added onto the surface of the cells in the three flasks (labeled as infected) while DMEM (1ml) was added onto the surface of cells in the other three flasks (labeled as control). After the inoculation, cells were incubated at 30°C. Cell samples were collected on 2,4 and 7dpi. HE staining and RT-PCR was performed. Two set of primers were used in the RT-PCR, namely, 104F-CTCCTTCTGGGTGCGTTTA-/104R-ATACTCTGGCGCATGCTCTC- & 207F-GATCCGCAGAATACGAGGG- / 207R-ACAACGTCTGGCTATGGC-. HE staining failed to show the signs of vacuoles (CPE) in cells. Interestingly, RT-PCR results demonstrate that both *C. iflavirus* and bunya-like-virus can infect RAW-Blue™ ISG cells and can maintain their survival in the cells until 7dpi. Nevertheless, possible the stronger amplicons during 2 and 4dpi, showed in amplification of Athtab bunya-like virus are due to the viruses immediate-early (IE) gene expression, RNA-dependent RNA polymerase on which the RT-PCR is based is turned on -mRNA + viral genome, but mRNA of RNA polymerase expression shuts down after 4pi and other genes then transcribed (Fig.1Right). Thus, it is important to evaluate RAW-Blue™ ISG cell cultures for studying nuclear location signals (NLS)s of *C. iflavirus* & Athtab bunya-like virus.

Keywords

RAW-Blue™ISG; *C. quadricarinatus*; *C. iflavirus*; Bunya-like virus; Nuclear Location Signals; NLS



Use of Immunoinformatics Approach to Design Multi-Epitope-Based Vaccine against Rhipicephalus Microplus Ticks to Control Bovine Babesiosis

Presenter

Mr. Muhammad
Younas

Muhammad Younas and Imran Rashid

University of Veterinary and Animal Sciences, Lahore, Pakistan

Type

Oral Presentation

Track

Animal and Veterinary
Sciences

Abstract

Ticks act as a vector for transmitting bovine babesiosis, theileriosis and anaplasmosis in domestic animals and also causative agents of Lyme disease in humans. Tick and tick-borne diseases remains a global threat to the livestock industry worldwide. Among the tick species, Rhipicephalus microplus (cattle tick) is the most important tick that is widely distributed in dairy and beef animals of the tropical and sub-tropical regions of the world. It acts as a vector of bovine tick fever in suspected cattle and caused death in untreated animals in later stage of disease. About 80% of world's cattle populations are at the risk of tick and tick-borne diseases and estimated economic losses due to this such as US \$ 13.9-18.7 billion annually. By controlling the vector through efficient way, we can diminish its worse effects on the cattle health and save billions of dollar. Conventional method is to control the ticks through application of chemicals acaricides, but it has many drawbacks such as its residues in milk and meat products, development of tick resistance and contamination of environments. Control through vaccination is a safe and sustainable solution. Using immune-informatics which based on the computational epitopes mapping discovered the potential vaccine candidates. We designed a multi-epitope based vaccine using already reported candidates such as Bm86, Bm95 and Subolesin of Rhipicephalus microplus tick using immune-informatics approaches. We used various immune-informatics tools such as VaxiJen, Immune epitope database (IEDB) and ABCPred for prediction of antigenicity, Helper T Lymphocyte (HTL) epitope, Cytotoxic T Lymphocyte (CTL) epitope and B-cell epitopes respectively. We predicated various epitopes for HTL, CTL and B-cell of above said candidates and selected based on their immunogenic behavior and binding affinity. After that, designed construct molecular docking with TLR-2 (Toll-like receptor-2) immune receptor was done using ClusPro server to understand the interaction and stability of the complex. Finally, the in-silico cloning was performed to check the expression of designed vaccine in E.coli cells. This multi-epitope based vaccine construct further need experimental investigation in bovine calves to determine its biological efficacy.

Keywords

Rhipicephalus microplus; Immune-informatics; Multi-epitope vaccine; Cattle



Molecular Characterization, Phylogenetic and Matrix Analysis of Anaplasma spp. from Bovines in India

Presenter

Dr. Amit Kumar Verma

Aditya Kumar, Arbind Singh, Amit Kumar Verma, P. S. Maurya, M. R. Prajapati, Amit Kumar and T. K. Sarkar

Type

Oral Presentation

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Track

Animal and Veterinary Sciences

Abstract

Bovine anaplasmosis is clinically characterized by pyrexia, weight loss, loss of appetite, decreased milk production, abortion and, sometimes death. This leads significant morbidity and mortality among dairy animals leading to significant economic losses. In spite of this, there are few reports on the molecular characterization, phylogenetic and matrix analyses of Anaplasma spp in bovines were available. The present study was conducted to perform molecular characterization and phylogenetic analysis of some field isolates of Anaplasma spp. infecting dairy animals in Uttar Pradesh, India. A total of 200 blood samples from cattle showing the clinical signs of bovine anaplasmosis were collected from western part of Uttar Pradesh, India. Blood smear examination stained with Giemsa stain and molecular confirmation by PCR were performed for the detection of Anaplasma spp. The molecular characterization was done by the sequencing of 16S rRNA gene and its bioinformatic analysis using MEGA version X. On stained thin blood smear examination, Anaplasma spp. were detected in 106 (53%) samples, while 16S rRNA gene based polymerase chain reactions revealed positive results with 176 (88%). The sequencing of 16S rRNA gene and the bioinformatic analysis of sequences revealed the existence of three different populations of Anaplasma spp. viz., Anaplasma marginale and two other Anaplasma spp. genetically related to Anaplasma capra and Anaplasma ovis circulating in the blood of infected cattle. All the field isolates of A. marginale from Uttar Pradesh, India were clustered in a single clade with others isolated from Iran, Brazil, Thailand and Israel, while A. capra isolates from India established in same clade of A. capra reported from Japan, China and South Korea. To the best of author's knowledge, this is the first report of Anaplasma capra and Anaplasma ovis from bovine in India and indicates the potential of cattle to serve as reservoirs of these pathogens.

Keywords

Anaplasma capra; Anaplasma ovis; Erythrocyte; Rickettsia; Tick-borne; Zoonosis



Immune and Oxidative Response against Sonicated Antigen of *Mycoplasma capricolum* Subspecies Capripneumonia-Causative Agent of Contagious Caprine Pleuropneumonia

Presenter

Dr. Mohd. Iqbal Yatoo

Type

Oral Presentation

Track

Animal and Veterinary Sciences

Rather Izhar Ul Haq¹, Oveas Rafiq Parray¹, Qurat Ul Ain Nazir¹, Showkat Ahmad Shah¹, Majid Shafi Kawoosa¹, Amatul Muhee¹, Kuldeep Dhama² and Mohd. Iqbal Yatoo¹

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Abstract

Vaccines are vital for prevention and control of mycoplasma diseases. Exploration of vaccine candidate for the development of vaccine is imperative. The present study envisages evaluation of immune and oxidative response against adjuvanted sonicated antigen of *Mycoplasma capricolum* subsp. capripneumonia in male Angora rabbits (1 year age, 2 Kg) divided in four groups each having 6 animals. Group 1 was healthy control and received 1 ml PBS via subcutaneous route. Group 2 was administered 1 ml of saponin adjuvanted sonicated antigen, Group 3 with 1 ml of montanide ISA 50 adjuvanted sonicated antigen and Group 4 with 1 ml of standard vaccine via subcutaneous route. Animals were evaluated for cellular and humoral immune response and oxidative parameters at 0, 7, 14, 21 and 28th day of the study. Total leukocytic, neutrophilic, and basophilic counts showed a significant ($P<0.05$) increase in vaccinated groups compared to the healthy group on most of the intervals. TNF- α levels were significantly ($P<0.05$) higher in the Group 2 than the Group 1 at all the time intervals and comparable to Group 4 than Group 3. IL-10 levels were significantly ($P<0.05$) higher in vaccinated groups compared to healthy group on day 14, 21 and 28 but were lower in Group 3 than Group 2 and Group 4. More hypersensitivity as inflammation and histopathological cellular infiltration in ear was produced in Group 2 and Group 4 than Group 3. IgG levels were significantly ($P<0.05$) higher in Group 2 and Group 4 than Group 3 on day 14 and 21. Antibody titers were comparatively higher in Group 4 followed by Group 2 and 3 than Group 1. Significantly ($P<0.05$) higher oxidant and lower antioxidant values were noted in Group 2 and 4 compared to Group 3 and Group 1 on most of the intervals. TLC and antibody titer showed increasing trend throughout the trial whereas TNF- α , IgG, L, M and E started decreasing from day 14 and IL-10, N and B from day 21. Hence, this study concludes that saponin adjuvanted sonicated antigen induces comparatively higher immune response than montanide but is associated with oxidative and inflammatory reactions.

Keywords

Antigen; Contagious caprine pleuropneumonia; Immunity; Mycoplasma; Oxidative stress; Rabbit; Vaccine



Evaluation of Phenotypic and Morphometric Characteristics in Community Based Breeding Program of Gumer Sheep

Presenter

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Type

Oral Presentation

Track

Animal and Veterinary
Sciences

Abstract

Community-based breeding programs (CBBP) have been adopted to improve Gumer sheep. This study was undertaken to evaluate growth rate, prolificacy performance, characterizing morphological traits and to establish weight estimating regression models. Data on 988, 854, 708 and 404 for birth, weaning, six months and yearling weights, respectively for growth rate traits and 678 for prolificacy traits were used for evaluation across the years of 2015 to 2020. Similarly, 85 males and 200 females were used for morphometric measurements viz; body length, height at withers, heart girth, horn length, tail length, scrotal circumference, tail circumference and ear length. The effect of non-genetic factors like a year of birth, sex, litter size, birth season, CBBP type and coat colour were analyzed by using general linear model procedures of the statistical analysis system (SAS). Correlation between morphometric measurements and stepwise regression procedures to determine the best fitting regression equation for the prediction of live body weights for male and female sheep. The overall least square means for birth, weaning, six months and yearling weights of Gumer sheep were 2.09 ± 0.02 , 11.63 ± 0.20 , 15.76 ± 0.42 and 21.14 ± 0.64 kg, respectively. A high and significant correlation between body weight and morphometric measurements suggest that either of the variables provide a good estimation of live weight. The regression models for both male and female were $Y = -42.29 + 0.46HG + 0.53BL$ with $R_{adj}^2 = 0.87$ and $Y = -16.11 + 0.40HG$ with $R_{adj}^2 = 0.50$, respectively. Body weight and prolificacy traits of Gumer sheep was in increasing trend and had high within variation which leads to further improvement for those traits through CBBP.

Keywords

Growth rate; Gumer sheep; Morphometric measurements; Prediction; Prolificacy; Regression; Sheep community-based breeding program



Rotavirus in Calves and Its Zoonotic Importance

Presenter

Dr. Umer Seid Geltu

Type

Oral Presentation

Track

Animal and Veterinary
Sciences

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Abstract

Rotavirus is a major pathogen responsible for diarrheal disease in calves, resulting in loss of productivity and economy of farmers. However, various facets of diarrheal disease caused by rotavirus in calves in the world are inadequately understood, considering that diarrheal disease caused by rotavirus is a vital health problem in calves that interrupts production benefits with reduced weight gain and increased mortality, and its potential for zoonotic spread. The pathological changes made by rotavirus are almost exclusively limited to the small intestine that leads to diarrhea. It is environmentally distributed worldwide and was extensively studied. Reassortment is one of the important mechanisms for generating genetic diversity of rotaviruses and eventually for viral evolution. So, the primary strategy is to reduce the burden of rotavirus infections by practicing early colostrum's feeding in newborn calves, using vaccine, and improving livestock management. Rotaviruses have a wide host range, infecting many animal species as well as humans. As it was found that certain animal rotavirus strains had antigenic similarities to some human strains, this may be an indication for an animal to play a role as a source of rotavirus infection in humans. Groups A to C have been shown to infect both humans and animals. The most commonly detected strains in both human and animals are G2, G3, G4, and G9, P [6]. Therefore, this review was made to get overview epidemiology status and zoonotic importance of bovine rotavirus.

Keywords

Rotavirus; Zoonotic; Diarrheal disease; Calves



Epidemiological Aspects and Risk Factors Associated with Some Equine Viral Diseases

Presenter

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Type

Oral Presentation

Abstract

Many equine viral diseases outbreaks were recorded. The African horse sickness virus (AHSV) mainly causes pulmonary, and cardiac forms with high morbidity and mortality rates in Africa. The equine influenza virus (EIV) is found all over the world and resulting in respiratory signs. The equine viral arteritis (EVA) has low morbidity and mortality rates and is mainly found in the Americas and Europe, its significance is due to the reproductive problems as abortion in mares and subfertility in stallions. The Equine infectious anaemia virus (EIAV) has low morbidity and mortality rates and causes long time course disease mainly fever, and chronic anaemia. The equine herpesviruses (EHVs) are the current most important pathogens due to their endemicity all over the world and their high morbidity. Egypt is free from AHSV, EVA, and EIAV, while the EIV and EHVs are endemic. Aerosols and body excretions are the main sources of infection with EIV, EVA, and EHV. Venereal EVA transmission could occur. The spreading of arboviruses is greatly affected by the vector activity. Accordingly, their seasonal occurrence was attributed to the environmental climatic conditions. While EIV and EHV were found to occur in winter and foaling seasons, respectively. The management risk factors result in occurrence of EIV and reactivation of latently infected cases of some diseases. The RNA viruses are characterized by genetic reassortment and raising of new mutants which result in increasing pathogenicity, and failure of the used vaccines. The main obstacles of the EHVs are their capability to establish infection in different types of host tissues adding to their immune evasion strategies.. The hard work of males and other stress factors render them more liable for infection with EVA, EIAV, and EHV. Genetically, some breeds of horses were at risk of AHSV, EVA, and EHV infection. Most of the donkeys, mules, and zebra develop subclinical forms that magnify their role in the epidemiological situation.. Lastly, the field of molecular epidemiology is crucial as it does not only help in tracking virus origin, prediction, and control but also could give an explanation for the failure of some vaccines and serological diagnostic tools. So, this review highlights the epidemiological situation of these diseases with particular concern to their related risk factors.

Track

Animal and Veterinary Sciences

Keywords

Epidemiology; Viral diseases; Clinical forms; Prevalence; Transmission's methods; Risk factors



Correlations between Sodium Selenite and Vitamin E with Serum Macro-Minerals in suckling male lambs

Presenter

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Type

Oral Presentation

Track

Animal and Veterinary
Sciences

Abstract

The effect of selenium (Se) and vitamin E (VitE) injection was evaluated on the concentration of serum macro-elements and the relationships were also surveyed in 16 suckling Makuei male lambs in 90 days. Lambs were classified into 4 groups of 4 lambs including control, VitE, sodium selenite (NaSe) and NaSe/vitaminE (Se/E) groups. The 0.1 mg/kg body weight NaSe and 8 mg/kg VitE were injected. Mean blood Se was higher in NaSe than other groups ($P < 0.01$). Blood Se in the Se groups was continuously increased, which was not noticeable in the NaSe and VitE. The least and upper blood Se were in VitE and NaSe groups, respectively. The mean concentrations of serum macro-minerals in the groups were within the normal range. Calcium was variable among the groups until day 30, then increased in control and VitE, it increased in Se groups until day 60 and then decreased not significantly to 90 days. Phosphorus was the opposite way of calcium. Magnesium decreased in the groups for 30 days and then increased insignificantly. The trend of calcium and magnesium in Se groups was to increase until day 60 but phosphorus was to decline. The lowest and highest calcium concentrations were in the control and NaSe, for magnesium in the VitE and control, and for phosphorus were in the control group, respectively. Mean comparison of minerals among groups and sampling times showed that Se had a significant increase from day 14 to 90, especially in NaSe ($P < 0.01$). Selenium showed the most positive relationships with calcium and phosphorus in VitE and NaSe. In total groups, Se was correlated with all macro-minerals on day 90 and overall sampling times was correlated only with calcium. In conclusion, administration of Se with VitE increased Se, which was more pronounced in NaSe. NaSe alone or with VitE had no effect on the amount of macro-minerals. The least correlation was observed between Se and macro-minerals in Se/E administration. The correlation between macro-minerals was positive and significant. Finally, the effect of NaSe on treatment and prevention of Se deficiency was more effective than VitE and Se/E. VitE accelerates the process of increasing blood Se in a short time. Selenium was associated with calcium and their co-administration is recommended.

Keywords

Selenium; Sodium selenite; Vitamin E; Calcium; Lambs



Performances of Broilers Fed Sequentially Under Tropics

Presenter

Dr. Kpomasse Cocou
Claude

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Type

Poster Presentation

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Track

Animal and Veterinary
Sciences

Abstract

Fast-growing broilers are still recording poor growth performances under tropics. Thus, this experiment aimed to evaluate the appropriate method to feed broilers under hot and humid climate. A total of 550 10-day-old Cobb broilers were assigned to 5 treatment groups having 5 replicates of 22 birds each: birds fed complete diet with constant energy (Estandar) and protein (Pstandar) levels (Control group (CONT)) and those fed two types of diet alternated in morning and in the afternoon as follows: Estandar/high protein and Estandar/low protein (B group), Pstandar/low energy and Pstandar/high energy (C group), Elow Plow and Ehigh Phigh (D group) and Elow Phigh and Ehigh Plow. Chickens were served twice a day: 6.30 AM and 6.00 PM. At 45 days of age, 6 chickens per replication were slaughtered for carcass evaluation, ultimate pH (pHu) and water holding capacity (WHC) of meat. Results showed that overall feed intake in the morning was significantly higher ($p < 0.05$) than that of evening in all groups. Daily feed intake, feed conversion ratio, mortality, carcass weight and pHu were similar ($p > 0.05$) across the treatment groups. However, final body weight and WHC were significantly improved in C group birds and abdominal fat significantly reduced in birds of B, C and E groups ($p < 0.05$). On the whole, the variation in energy levels of diet improved growth and water holding capacity of the meat of broilers under tropics.

Keywords

Sequential feeding; Fast-growing broilers; Fat; Ultimate pH; Tropical climate



Long-term Oral Intake of Artificial Sweetener Aspartame Affects Metabolic and Reproductive Function in Female Albino Mice

Presenter

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Type

Poster Presentation

Track

Animal and Veterinary
Sciences

Abstract

Aspartame is a non-nutritive, synthetic sweetener used as a sugar substitute sold under brand names including Nutrasweet®, Equal®, and Sugar Twin®. It is used in more than 6, 000 food products (sweetened beverages, instant coffee, puddings, fillings, and dairy products and medicines) around the world. Despite the large scale use, its safety has been a matter of concern due to its numerous adverse effects including neurobehavioral, metabolic, reproductive and carcinogenic effects. Oral aspartame intake (40 mg kg b.w.) for a period of 90 days induced metabolic and reproductive adverse effects in female mice. Female mice treated with aspartame showed significant ($p \leq 0.01$) decrease in food and water intake and body weight. The animals fed with aspartame showed a highly significant ($p \leq 0.001$) decrease in follicle stimulating hormone, luteinizing hormone and estrogen levels compared to the control group. Besides, some histological alterations were also observed in ovary and uterine histomorphology in aspartame treated female mice. Aspartame induced degenerative changes and vacuolation of the connective tissue stroma, degenerated follicles, shrunken oocytes, deformation of the zonapellucida, degeneration and necrosis of the endometrial lining and endometrial glands. The present study suggests that aspartame consumption; even at daily admissible intake is not totally safe especially for children and women of child bearing age. The reduced food intake affects the overall calorie requirement of the body and may have direct implications on the reproductive function of the body and offsprings health.

Keywords

Aspartame, Food intake; Body weight; Follicle stimulating hormone; Oocytes; Endometrium



PROCEEDING ES 2022



A Substitution Box Structure Obtained from Lava Lamp and Chaotic Systems

Presenter

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Omer Kaya and Fatih Ozkaynak

Software Engineering Department, Firat University, Turkey

Type

Oral Presentation

Abstract

In this study, a robust entropy source has been created based on the lava lamp and chaotic systems. By using this obtained entropy source, its practical applications in the cryptology have been investigated. Substitution box structures, which are the basic components in many block cipher algorithms, are generated from this entropy source. The successful performance results showed that the proposed entropy source could offer a new opportunity for further studies.

Track

Computer Science &
Information
Technology

Keywords

Information security; Cryptography; Chaotic systems



Enhanced Network Life Time Using Secure Acknowledgements with Cryptography

Presenter

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Type

Oral Presentation

Abstract

Emerging year of one recent technology is that help and used to such as critical time successful design called Mobile Ad hoc Network (MANET) that allows to the users to access information and services anywhere regardless of their geographic location. MANET is the significant technologies used to more flowing more application conference, meeting, short time connection, natural issues like (flooding, forest fire, agriculture and military) ect., among various un-wired communication technologies where all the mobile nodes are mobile and which can be connected to random dynamically using wireless link in the random manner. But it stream including critical issue and challenges such as security, energy, delay, packet drop quality of service ect., In this research paper proposed Secure Two Acknowledgement method with MARS4 (STACK) that implement for new intrusion detection system for on-demand wireless networks. MARS4 can improve a best performance of trusted quality output to reduce transmission delay, transmission time and also increase network communication throughput help of Network Simulator-2.34 (NS2) to implement it.

Track

Computer Science &
Information
Technology

Keywords

Ad hoc; Security; Routing; STACK; MAJRS4



PROCEEDING ES 2022



Cellular Automata Multi-model Simulation Spread for Tsunami Waves

Presenter

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Type

Oral Presentation

Abstract

The main objective of the project is to derive a global picture of a tsunami based on a simulation model. To simulate various scenarios of tsunami wave spread. To study the performance and effectiveness of cellular automata models in tsunami wave propagation. Understanding this temporal distribution is important for the application to tsunami warning and prediction. Tsunami is regarded as a natural hazard that causes severe damage to the coastal areas. Among the natural phenomena that can cause a tsunami is submarine faulting. The wavelength of the tsunami waves and their period will depend on the generating mechanism and the dimensions of the source event. In many research institutions in India, research work is pursued on the expected arrival time computation, sea-level changes, and ocean tides during tsunamis as well as other environmental issues that affect the lives of people. This basic information may be used as an extremely important database for early response and for further development. Since tsunami-warning centers have only minutes to issue a forecast, a faster approach would be highly desirable. The impact of a tsunami on the coast can be determined from the rate of spread and depth of the ocean. With recent development in hydro informatics, this appears feasible using the general idea of data-driven models. This prompted us to undertake this project. The propagation of tsunami waves simulation models-various forms of tiling has been proposed in Cellular Automata. The multiresolution models framework has been introduced. In this examination, two-dimensional and various techniques for characterizing closest neighbors permit us to change the model to all the more sensibly mimic the modeling.

Track

Computer Science &
Information
Technology

Keywords

Cellular Automata, Tiling, Two dimensional, Homogeneous Ocean, Non-Homogeneous Ocean, Primary waves, Secondary waves, Horizontal, and vertical wave motions.



Comparative Analysis of Service Quality of Food served at Public, Private and Fast Food Restaurants

Presenter

Dr. Prabhjot Kaur

Prabhjot Kaur

Guru Nanak Girls College, India

Type

Oral Presentation

Track

Social Sciences

Abstract

Quality is a measure of the degree of excellence or degree of acceptability by the consumer. In other words, it is the summary of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. Every product should have attributes to satisfy the customers' wants / needs of the consumer. It also covers the safety aspect and value for money. Permission was sought from the restaurants and only 32 restaurants showed willingness to participate. Primary data was collected using self-administered interview schedules based on the literature related to various aspects of service quality. About 60.6 per cent of the respondents were found to be satisfied with the quality of service offered by the studied restaurants. The results of the t-test were marked by the significant p-values of 0.004 and 0.033 respectively at 95 per cent level of confidence for these two parameters between private and public restaurants. However, insignificant p-values of 0.988 and 0.942 respectively at a confidence level of 95 per cent marked that speed and efficiency of service as well as standard of service-ware were almost similar in both private and fast food restaurants. The respondents rated speed and efficiency of public restaurants quite slower in comparison to the fast food ones.

Keywords

Service quality; Restaurants; Customer satisfaction; Food quality; Service



Innocent Passage of Warships through the Strait of Hormuz: Iran Legal Position And International Law

Presenter

Dr. Ahmad Kashfi

Ahmad Kashfi

Quality Assurance Analyst , Teleperformance, Malaysia

Type

Oral Presentation

Abstract

The four most significant Straits on the earth are the Strait of Malacca, the Panama Canal, the Suez Canal, and the Strait of Hormuz. These are all strategic and critical assets, but since the Strait of Hormuz has been focal points of conflict between the world's superpowers in strategic region of the Persian Gulf, it serves as a symbol for the separation of East and West, North and South. International passage and navigation in the Strait of Hormuz and the territorial waters of Iran has been debated in international law of the sea in the last four decades. Iran is a costal state that has not yet ratified the 1982 United Nations Convention on the Law of the Sea (UNCLOS). Iran concern in this regard is not logical, since in UNCLOS the innocent passage is lawful as long as it does not endanger peace and security of territorial water of the costal State. This issue has been also led to the most critical argument on the agenda of Iran, because the Strait of Hormuz is the main passage to energy basin of the world. Constant and continuous disputes between Iran and the U.S. have generated Iran's sensitive position towards the passage of warships through the Strait of Hormuz. This research strives to resolve long-established legal ambiguity over the passage through Hormuz Strait by elaborating all the relevant legal sources and provide clear insight of Iran and international law legal position.

Track

Social Sciences

Keywords

THE STRAIT OF HORMUZ; International law; Passage of warships; Innocent Passage; Sovereignty



Effect of Political Risk on the Performance of Shariah-Compliant Equity Portfolios in International Markets

Presenter

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Raza

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Type

Oral Presentation

Abstract

Political risk is an important determinant of portfolio returns. In this study, we revisit the importance of political risk in the context of a constrained portfolio, namely a Shariah-compliant equity portfolio, invested in 61 international markets. The weights of each constituent are driven by its relative exposure to political risk for the period 1996-2018. Results show that, in comparison with conventional investors, the Shariah-compliant investors gain substantial benefits when the allocation decision is based on political risk. A Shariah-compliant portfolio outperforms its conventional counterpart by 7.98% annually when tilted toward politically stable countries. The economic benefits further increase to 804 basis points when the portfolio allocates more funds to politically unstable countries. The tilted Shariah-compliant equity portfolio successfully reduces the downside risk, and hence results in improved stability in financial performance.

Track

Social Sciences

Keywords

Political Risk; Shariah compliant investing; International portfolio diversification



How Cooperative Membership Informs Livelihood Diversification to Influence Multidimensional Poverty

Presenter

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Type

Oral Presentation

Abstract

Diversification of livelihood portfolios and cooperative membership over the years has grossly been an avenue to boosting households' income, and ensuring a safety net to escape poverty, while poverty have been concluded to exceed mere income deprivation but rather, a multidimensional quagmire. This study hence sets to reveal the cross relationship effects between cooperative membership, livelihood diversification, and multidimensional poverty among poultry farming households in South west Nigeria, using data collected from 210 households via multistage sampling procedure and analysed using econometric, parametric, and non parametric analytical tools. Result showed that, the mean years of formal education was found to be about 17.9 years, while there exists a significant difference in the years of formal education between the diversified and non diversified households, significant at 5% probability level. Also, 59.5% of the cooperators and noncooperator categories are diversified in their livelihood activities and further analysis are given on this. A huge proportion of the poultry farming households (59.04%) are diversified. About 59.41% of the cooperator category diversified their livelihood activities, while it is 58.72% for the noncooperator category. A majority (89.52%) diversified into non farming activities. Furthermore, the diversified category suffers lesser deprivation than their nondiversified counterpart except for sickness frequency (perhaps stress induced), and the standard of living category, while gender, formal education, primary labour source, primary occupation, and Cooperative membership negatively influence livelihood diversification, and significant at 10%, 5%, 1%, and 1% respectively but positively influenced by multidimensional poverty, and significant at 10%. Also, the cooperator respondents are appreciably satisfied with the performance of cooperatives in the study area, with access to Loan (72.38%), Loan repayment (67.62%), Transportation (68.10%), Marketing (67.14%), Training (69.5%), Low patronage (70%), Political interference (69.05%). Finding based policy recommendations are proffered

Track

Social Sciences

Keywords

Livelihood Diversification; Multidimensional Poverty; Cooperative membership; Magalef Index (MI); Multidimensional Poverty Indices (MPI); Tobit



PROCEEDING ES 2022



Chalking out a Workplace Re-Entry Plan for Women on Career Break

Presenter

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Type

Oral Presentation

Abstract

Workplace re-entry of women after a career break is a daunting task. It is much difficult then perceived. The paper will describe how the re-entry of women on career break should be planned. Women on career break are women who have prior experience at workplace but they take a break due to motherhood, elderly care, marriage and other societal reasons. Re-entry is defined as returning to a paid workplace setting where their skills and experience is monetized. Few variables which would define the research are how should women on career break create their own personal brand. They should dig deep into their self to analyze their marketable strengths, core values, what gives them joy and what bothers them the most. They should show how they utilized time during their career break, what they achieved and what were the transferrable skills they acquired. Women on career break would be given insights on what is the right time to plan their return. They should list down attributes of their future job before trying to start the search for a new job. The tips on creating a successful resume for women on career break and how to tactfully answer interview questions would be listed in the end of the paper. This paper would be useful for all women on career breaks across the world.

Track

Social Sciences

Keywords

Career break; Re-entry; Gender gap; Diversity hiring; Resume gap



Relativistic Dynamics and Structure Formation in a Matter-Dominated Friedmann Universe

Presenter

Mr. Robert Nyakundi Nyagisera

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Type

Poster Presentation

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Track

Social Sciences

Abstract

Any significant effects on photon frequency by quantum effects on cosmic scales within General Relativity can make the expansion history of the universe take a different form. In this paper, we study the inter-relationship between three astronomical quantities viz., light intensity, redshift, and number density of galaxies by adopting an appropriate parameterization of the standard redshift in the form of parametric and non-parametric redshift models in the standard Lambda CDM model. To do this, we assume an alternative interpretation of the flat Friedmann-Lemaitre-Robertson-Walker metric through modified redshift. We implement the relativistic dynamics equations for light intensity and number density as functions of redshift with dark energy to obtain structure formation and evolution of galaxies in the matter-dominated Friedmann Universe up to $z=5$ using MATLAB programming software and weigh them against those formed without dark energy. In our results, we observe that galaxy structure formation rate was rapid during the primordial stage with z peaking at $z=1$ declining slowly thereafter, predicting different cosmic expansion histories in the real universe. Interestingly we note that structure formation proceeds at the same rate both standard redshift and modified redshift when z is about 1.8 in value. The modified redshift models recovers the standard redshift model at $z=f(z)$. In addition, we observe that light intensity curves fall rapidly due to Tolman's dimming of light confirming the validity of the Friedmann model.

Keywords

Modified redshift; Light; Intensity; Density; Dark energy; Galaxies; Structure formation; Friedmann; Fractal.



Impact of Bonga sheep breeding' cooperative on households' income in Southern Ethiopia: Evidence from Endogenous Switching Regression

Presenter

Mr. Kassa Tarekegn

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Poster Presentation

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Track

Social Sciences

Abstract

Bonga sheep is one of the known indigenous sheep breeds in Ethiopia with a high rate of growth and weight gain under smallholder management. To enhance the productivity of the sheep, about 16 Bonga sheep breed improvement cooperatives were established in the Kaffa zone of southern Ethiopia. Although these cooperatives show success in terms of breed improvement and income generation, there is no empirical evidence thereon. Thus, this study was intended to spot factors affecting cooperative membership and to estimate membership impact on farmers' income. Data from 320 sampled households were collected from the zone by using multistage sampling techniques. To control the trouble of selection biases, the endogenous switching regression (ESR) model was used to estimate the cooperative membership effect. The probit model result of ESR shows that the probability of farmers' membership decisions is decided by a number of ewe sheep owned, extension contact, and proximity to cooperative office. The ESR estimation results further confirm that members get significantly better (34%) than if they had not been members and non-members would have even performed better (56%) than members if they had joined cooperatives. This suggests sheep breeding cooperatives are effective in improving the income of sheep producers. Thus, efforts need to be made to tackle factors that are impeding households' cooperative participation. Further, all respective stakeholders close to strengthen the prevailing cooperatives and therefore the establishment of additional cooperatives were suggested.

Keywords

Bonga sheep; Cooperatives membership; Impact evaluation; Kaffa zone; ESR



PROCEEDING ES 2022



Socio-Intercultural Entrepreneurship Capability Building and Development

Presenter

Dr. Jose G. Vargas-Hernandez

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Type

Oral Presentation

Abstract

This study aims to analyze the socio-intercultural entrepreneurship as a capability building and development. The analysis departs from the assumption that entrepreneurship is a cultural embedded concept, although the intercultural category used in entrepreneurial studies has not been founded full conceptual, theoretical and empirical support. Based on this existing research gap that this analysis reviews the literature to address the main issues of the socio-intercultural entrepreneurship focusing in the capability building and development to conclude that it is more situational context and environment oriented. The methodology used are the exploratory and analytical tools. Socio-intercultural entrepreneurship competence is highly related to be situational context and environment-dependent on awareness and understanding of cultural differences.

Track

Social Sciences

Keywords

Capability building; Development; Entrepreneurship; Socio-intercultural

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