



# 1<sup>st</sup> International Conference on Science, Technology, Engineering, Mathematics, and Social Sciences (STEMS)

**A multi-disciplinary conference**

**March 30-31, 2021**

**ABSTRACT BOOK**



Directorate of International Linkages

The Islamia University of Bahawalpur, Pakistan

## Vice Chancellor's Message

As Vice Chancellor of the Islamia University of Bahawalpur, it is with great pleasure that I welcome you to the International Conference on Science, Technology, Engineering, Mathematics and Social Sciences hosted by department of Political Science. Whether you are traveling a significant distance to be here, or participating online, it is my honor to welcome you.



The conference is bringing the distinguished researchers, academics, decision makers, public representatives, and students to the two-day International Conference on "Science, Technology, Engineering, Mathematics and Social Sciences" (STEMS). One of the key objectives of the Islamia University has been to allow the best possible use of resources and opportunities for knowledge and study, along with the personal and professional advancement of our students. The core goal of the STEMS is to provide a multi-dimensional forum for scholars, academia, and policy makers from around the globe to share their expertise on this issue of critical importance.

Moreover, I am sure that this conference will offer immense rewards, vibrant discussions, high-quality research studies, and guidance on Science, Technology, Engineering, Mathematics and Social Sciences. The Muslim Ummah had access to all modern sciences in one era and thanks to it ruled the whole world. Even today, we have the best opportunity to access all modern sciences, including science and technology, and to lead the world as we have in the past, ensuring socio-economic development.

Finally, I would like to appreciate Dr. Abid Shahzad Director, Directorate of International Linkages, and entire team for their tireless efforts in arranging this international conference.

**Engr. Prof. Dr. Athar Mahboob (Tamgha-e-Imtiaz)**

Patron-in-Chief

## Conference Chair Message



It is always fascinating to do the new and novel job. As someone rightly said, "The difficult task is only difficult before it is started". The idea of organizing an international event is always challenging and demanding. When you believe that "Not failure but low aim is a crime" then avenues, paths and ways are there to support you.

The journey of organizing the STEMS is written with the continuous support and cooperation of all faculty members and volunteers that strengthen me enough and provided with a launching pad to take the flight to achieve the highest academic goal. The best professional development is ongoing, collaborative, and connected to and derived from working with students and understanding their culture.

Keeping in view the significance of teaching and learning, the conference theme and name was designed as the "International Conference on Science, Technology, Engineering, Mathematics and Social Sciences ". It was also aimed to engage the researchers and audiences from a broader perspective. This conference has provided a platform to the national and international researchers, faculty and students to share the latest research findings with their colleagues.

I am grateful to all honorable speakers from the core of my heart that travelled from far flung areas of Pakistan.

I would pay special thanks to all the presenters who came to present their research papers from all over Pakistan. Moreover, the untiring work of the faculty members, organizing committee members and all PhD, MPhil, M.A and BS students has made this event memorable. The continuous support of Worthy Vice Chancellor and IUB are the real assists of STEMS.

**Dr. Abid Shahzad**

Director International Linkages  
The Islamia University Bahawalpur

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## **STEMS001: CATALYTIC INVESTIGATION OF METAL COMPLEXES AND METAL OXIDES NANOPARTICLES IN BIODIESEL SYNTHESIS**

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Biodiesel synthesis is growing research area due to alarmingly fast depletion of petroleum fuel. To replace fossil fuel and environmental pollution, biodiesel from locally feed stock using cost effective catalysts is main objective of the present study. Zn (II), Cd (II) metal complexes prepared using anthranilic acid as ligand and ZnO, CdO nanoparticles prepared from the metal complexes, were used as catalysts in transesterification reaction to prepare biodiesel from mustard oil. The metal oxides (ZnO & CdO) were characterized by FT-IR, XRD and SEM. The FT-IR showed absorption peak at 489 and 440 cm<sup>-1</sup> which were attributed to ZnO and CdO respectively. The XRD indicated the formation of pure wurtzite structure of ZnO and face centred cubic symmetry structure of CdO. The rod like morphology of ZnO nanoparticles and spherical, semi-spherical shaped particles of CdO were observed in SEM studies. The synthesized biodiesel was chemically characterized by FT-IR, and <sup>1</sup>H-NMR spectroscopic techniques. The percentage conversion of triglycerides(oil) into fatty acid methyl esters (biodiesel) was obtained via <sup>1</sup>H-NMR. The fatty acid composition of prepared mustard oil biodiesel was determined through

HPLC that indicated three main unsaturated FAMEs (C18:2, C18:1 and C22:1). ZnO and CdO exhibited 65.7 %, 53.7 % conversion percentage, respectively while their metal precursors showed less than 10 % catalytic activity. Pakistan is agricultural country, so there is great scope in this field to make commercial usage of biodiesel from locally indigenous renewable feedstock and replace costly imported fossil fuel.

**Key words:** Metal oxide, nanoparticles, transesterification, conversion

### **STEMS002: CATALYTIC DEGRADATION OF TOXIC DYES IN PRESENCE OF RECYCLABLE NANOPARTICLES**

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Industrial effluents consist of various toxic dyes that are dangerous to environment and induce large scale water pollution. Therefore, degradation of these toxic pollutants from water sources is necessary. Here, Ag@NPs loaded polystyrene-poly (N-isopropyl meth acrylamide-acrylic acid) core shell particles were synthesized by polymerization method. Prepared particles were used as catalyst to degrade toxic dyes such as Rhodamine B (RhB), Methylene blue (Mb) and Congo red (CR) in presence of sodium borohydride (NaBH<sub>4</sub>) reductant. Controlled reactions were also carried out to evaluate high activity of catalyst. Pseudo first order kinetic model was adopted to study the degradation of toxic dyes. It was seen that composite nano-catalyst induced the increase in rate of reduction reactions and made the reaction feasible. Even, catalyst maintained its activity in presence of multiple toxic dyes. Dye's degradation reactions were also evaluated on the basis of Langmuir Hinshelwood (L-H) mechanism. Pollutant's degradation was also done by varying reaction conditions like amount of catalyst, NaBH<sub>4</sub> and toxic dye.

### **STEMS003: IDENTIFICATION AND CHARACTERIZATION OF A NAC TRANSCRIPTION FACTOR FROM COTTON**

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In most of the developing countries including Pakistan, their economies are agriculture-based. Climate changes badly influence the development and yield of crops and also consider a major yield-limiting factor in agriculture. Numerous TFs are known over the past few years that can serve as a key to regulating the expression of stress-associated genes. The NAC transcription factor, which has a significant function in plant production, development, and response to various environmental stresses, is now one of the largest families of the transcription factor in plants. The present study is designed to gain an insight into the role of an uncharacterized NAC protein (GhNAC29-like) from *Gossypium hirsutum*. Total RNA was isolated, and cDNA was synthesized for PCR amplification of the GhNAC29-like gene. The GhNAC29-like sequence was subjected to *in silico* characterization including similarity search, multiple sequence alignment followed by a phylogenetic study. Expression data of NAC29-like gene in the cotton plant (*Gossypium hirsutum*) was obtained from CottonFGD database. The result shows that under cold stress gene expression is maximum that increases over time whereas under heat, drought, and salt stress, gene expression increase at a certain level, and then it decreases. Hence, GhNAC29-like shows significant expression in various abiotic stress having  $p < 0.05$ . *In silico* study shows that various putative stress reactive cis-regulatory motifs and their unique binding proteins, functional domain, and stable structure of GhNAC29-like were identified. These results suggest that GhNAC29-like functions as a stress-responsive transcription factor in positive modulation of abiotic

stress tolerance and may have applications in the engineering of stress-tolerant crops.

**Key Words:** Abiotic Stress, Transcription factors, GhNAC29-like, In silico analysis.

#### **STEMS004: GREEN SYNTHESIS OF CADMIUM OXIDE-DOPED SILVER NANOPARTICLES AND ITS APPLICATION IN DEGRADATION OF BRILLIANT GREEN DYE FROM INDUSTRIAL WASTEWATER**

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The article reports the economically viable, simplistic, green synthesis and detailed characterization of bare and CdO-doped silver nanoparticles from citrus limon seed extract. The performance of the synthesized nanoparticles was explored for the adsorption and photocatalytic degradation of brilliant green dye under visible light irradiation. The higher photodegradation efficiency of 92 % for doped and 79.5 % for bared Ag nanoparticles in 90 minutes was attributed to the synergistic effect of spherical crystallites of Ag along with surface stability accompanied by CdO. It can be inferred that CdO doping in Ag lattice leads to a noticeable enhancement in photocatalytic activity as CdO acts as an electron trap, inhibit the electron-hole pair recombination and provides redox-active species for BG degradation. Likewise, negatively charged surface oxygen moieties of CdO electrostatically attract positively charged dye molecules and enhance the ions-electron shuttling between catalytic interface and dye molecules. The integrated CdO doped nanoparticles also proved to be a recyclable photocatalyst with greater stability. Thus, the premeditated photocatalytic CdO-doped silver nanoparticles-based platform can

further be exploited for remediation of different organic effluents from industrial wastewaters.

**Keywords:** Citrus limon Seed; Green synthesis; Silver nanoparticles; Cadmium oxide; Brilliant green dye; photodegradation efficiency.

### **STEMS005: AMAZING BIO TRANSFORMATIONAL DERIVATIVES OF DYDROGESTERONE**

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Dydrogesterone (1) is a potent orally active progestogen. Biotransformation of dydrogesterone (1) by using human volunteers, rat, dog, mouse, rabbit and rhesus monkey, fermentation with cell suspension cultures of *Sepedonium ampullous* and *Azadirachta indica*, and fermentation with fungal cultures including *Fusarium solani*, *Cephalosporium aphidicola*, *Fusarium lini*, *Rhizopus stolonifer*, *Cunninghamella elegans* and *Gibberella fujikuroi* afforded amazing derivatives 2-16.

**Keywords:** Biotransformation, Dydrogesterone, Derivatives

### **STEMS006: IDENTIFICATION AND CHARACTERIZATION OF WRKY GENE IN COTTON SPP**

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Cotton production is both a contributor to and a ‘victim’ of climate change. The main reason for biotic and abiotic stresses is the change in climate and atmosphere that affect badly on crop production of an area. Transcription factors (TFs) make plants able to survive under adverse ecological circumstances, and they are the main genetic parameters due to their extensive usage in crop production. These TFs are the main regulatory factors that regulate the growth of plants and respond to various environmental stresses. A superfamily of transcription factors is WRKY perform the main function in the processes of survival of plant under harmful stress conditions of the environment. The present study is designed to gain an insight into the role of an uncharacterized WRKY protein (GhWRKY40) from *Gossypium hirsutum*. Total RNA was isolated, and cDNA was synthesized for PCR amplification of the GhWRKY40 gene. The GhWRKY40 sequence was subjected to in silico characterization including similarity search, multiple sequence alignment followed by a phylogenetic study. The three-dimensional structure was predicted by I-TASSER server followed by authentication. Besides, subcellular localization, protein-protein interaction, and prediction of functional domains that showed variations of gene sequences under these stress conditions were also investigated using different tools. GhWRKY40 sequence was investigated using the Cotton gene expression database called Cotton FGD (<https://cottonfgd.org/>). The data were acquired and analysed for abiotic stresses including cold, heat, drought, and salt stresses. In conclusion, GhWRKY40 gene expressions suggested their association in providing defence to plants under abiotic stresses.

**Key Words:** Transcription factor, Abiotic stresses, GhWRKY40,

### **STEMS007: IDENTIFICATION AND EXPRESSION ANALYSIS OF ETHYLENE RESPONSE FACTOR GENE IN COTTON SPP**

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Transcription factors have a vital function in activating the expression of defence genes. The family ethylene response factor is one from large TFs families of plants. ERF family is the part of a superfamily called AP2/ERF, which regulates physiological, developmental, and stress responses. Components of the ERF TFs family generally bind to GCC-box found in their promoter and play role in various environmental stresses. The present study is designed to gain an insight into the role of an uncharacterized ERF gene from *Gossypium hirsutum*. Total RNA was isolated, and cDNA was synthesized for PCR amplification of GhERF038-like gene. In silico analysis was also performed by using different bioinformatics tools to predict promoter region, domains, and motifs identification in ERF protein and for structure prediction as well as validation, etc. CAATBOX, TATABOX motifs were predicted in promoter sequence. Also, it was predicted that for AP2, B3, RAV family TF many hit sequences were present in the promoter. ERF038-Like TF contains a single DNA binding domain called AP2/ERF which play role in abiotic stresses. GhERF038-like sequence was investigated using the Cotton gene expression database called Cotton FGD (<https://cottonfgd.org/>). The data were acquired and analyzed for abiotic stresses including cold, heat, drought, and salt stresses. In conclusion, ERF038-Like gene expression has proposed its role in providing tolerance to plants under abiotic stresses. Transformation and over expression of these genes may be a powerful approach for producing stress-tolerant plants.

Keywords: AP2/ERF, plant, transcription factor, gene expression, regulation.

### **STEMS008: DIFFERENTIAL EXPRESSION ANALYSIS OF HEAT SHOCK PROTEIN GENE IN COTTON SPP**

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Heat shock proteins (HSPs) acts as chaperons upon activation against various abiotic and biotic stress factors. HSPs have been characterized on basis of molecular weights and each member has its different functions. In response to signals, activation of heat shock factor that binds to heat shock elements and regulates the transcription of HSP. The expressional studies of HSP in many different species have been performed but the exact point in signal control still needs to be explored. The aim of the present study is differential expression of class I HSP17.5 gene in cotton spp. Total RNA was isolated from cotton species *G. hirsutum* and *G. arboreum* and cDNA was synthesized for amplification of HSP gene. The GhHSP 17.5 was sequenced and characterized in silico including different searches, multiple alignments followed by phylogeny study. The three-dimension structure was predicted by I-TASSER. The 3D structure assessment and interactions were validated by the Ramachandran plot. PCR analysis of HSP 17.5 gene was validated by analysis of HSP through a cotton functional genomic database. The future study will analyze the overexpression of the gene in bacteria that will help in generating bioengineer stress-tolerant plants.

**Keywords:** HSPs, Heat shock factors, Stress response, biotic and abiotic stress.

### **STEMS009: 1HNMR, FTIR AND MASS SPECTROMETRIC ANALYSIS OF BIOPOTENT DIMEDON AZODERIVATIVES AND THEIR TRANSITION METAL COMPLEXES**

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The expansion of novel and extra operative antibiotic proxies are essential for human health. Here, we have produced a new series of azo compounds including, (5,5-dimethyl -2-[(E) - phenyldiazenyl] cyclohexane-1,3-dione (DMPDCDO), 5, 5- dimethyl2 - [(E)-(2 methylphenyl) diazenyl] -5,5 dimethylcyclohexane - 1,3 - dione (DMMPDCDO), 5,5- dimethyl -2- [(E)-(4-ethylphenyl) diazenyl]cyclohexane- 1,3-dione (DMEPDCDO), and 5,5-dimethyl-[(E)-(4- methylphenyl) diazenyl]-5,5-dimethylcyclohexane-1,3 dione (DMPDACDO) were successfully synthesized via diazo-coupling of substituted amine's diazonium salts with dimedone at 0-5°C. Then azo compounds were further utilized for the synthesis of metals complexes with Zn<sup>2+</sup>, Mn<sup>2+</sup>, Ni<sup>2+</sup>, Co<sup>2+</sup>etc. The purification of the synthesized ligands along with the metal complexes was known by TLC technique. Moreover, <sup>1</sup>HNMR, FTIR, and Mass spectrometric systems were successfully utilized to confirm the synthesis of ligands as well as metal complexes. The FTIR results distinctly confirmed synthesis by a characteristic (distinct) peak of (-N=N-) in 1500-1400 cm<sup>-1</sup> range, while the C=O peak in 1740-1530 cm<sup>-1</sup> range. The metal complex syntheses were confirmed by lowering the carbonyl functional group frequency owing to the metal carbonyl interaction. The <sup>1</sup>HNMR results confirmed synthesis by vanishing -NH group peak at chemical shift value in of 4.05-4.07 ppm range. The Mass spectrometric study confirmed the synthesis due the presence of clear molecular ion peaks, base peaks and the ion fragments pattern. Biological activities were also performed. Results have shown that synthesized compounds and their metal complexes are good to moderate antibacterial and antifungal agents against americane and fluconazole respectively.

**Keywords:** Azo Compounds, Diazotization, Antifungal, Antibacterial, Diazonium Salts

**STEMS010: EFFICIENT REMOVAL OF NORFLOXACIN BY MOF@GO COMPOSITE: ISOTHERMAL, KINETIC, STATISTICAL, AND MECHANISTIC STUDY**

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In this paper, the facile synthesis of graphene oxide and MOF based composite material for the demanded adsorption of leading antibiotic is reported. The adsorbent showed good results for removal of norfloxacin with high adsorption capacity (1114.82 mg/g) and removal efficiency (93.61 %). In addition, Langmuir model proved most suitable with highest value of  $R^2 = 0.99929$  among three applied isothermal models. The thermodynamic study showed spontaneous and exothermic ( $\Delta H = -1.1 \times 10^5$  KJ/ mol,  $\Delta G = -1332.433$  KJ/ mol) nature of adsorption process with reusability of 88.4 % after several cycles. Moreover, statistical analysis and mechanistic study were also performed.

**STEMS011: STUDIES OF CONDENSED PYRONES**

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Heterocyclic compounds are those compounds that contain a cyclic structure with at least two or more different kinds of heteroatoms beside carbon in the ring system. The most common heteroatoms are nitrogen, oxygen and Sulphur. Heterocyclic compound containing Boron, Aluminium, Silicon, phosphorous, Meagnesium and Arsenic as

heteroatoms are also known. Considerable diversity in the system is possible. There is no prior limitation to the size of ring. Heterocyclic compounds with more than one ring are common. Heterocyclic compounds are also widely distributed in nature. The possible structural variation includes the change of one heteroatom for another in a ring and different positions of the same heteroatom within the ring. Heterocyclic compounds are widely distributed in nature. Many are of fundamental importance to living system. They are used as optical brightening agent, as antioxidants, as corrosion inhibitors and as additives with a variety of other functions. In this study pyrone condensed with benzene or pyrazole were undertaken which are also heterocyclic compounds. Various reactions were performed by using salicaldehyde and active methylene compounds ethyl acetoacetate, ethyl cyanoacetate and malonic acid in the presence of base with stirring. Mechanisms of these synthesis are as follows: 1) Salicaldehyde and ethylacetoacetate, 2) Salicaldehyde and ethyl cyanoacetate, 3) Salicaldehyde and malonic acid Meerwein Arylation: Diazonium salts of different anilines were prepared and allowed to react with coumarin on proceeding the experiment products were not isolated but gummy materials were obtained. All efforts to purify the materials were unsuccessful. It seems diazonium salt formed failed to react under specific condition.

**Key words:** coumarin, Pyrano (2,3-c) pyrazole-6-one

## **STEMS012: COMPETITION AND EFFECT OF CENTRAL METAL ATOM IN ZEOLITIC IMIDAZOLATE FRAMEWORKS (ZIF-8 & 67) FOR EFFICIENT REMOVAL OF $Pb^{2+}$ & $Hg^{2+}$ FROM WATER**

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Heavy metals especially lead (Pb) and mercury (Hg) are recognized as most emerging pollutants in underground water and are major threat to public health around the world. Major challenge to mitigate water pollution is construction of effective materials containing a host of deceivingly accessible high-density and high-level efficiency. Herein, we have synthesized two metal frameworks (MOFs) with efficient porosity showing the right combination of structures. Representatively, ZIF-8 and ZIF-67 were designed by reacting Zn, Co salts with 2-methyl imidazole showing superior efficacy in removing Pb and Hg (1978.63&1436.11mg/g respectively) from water. These adsorbents displayed high distribution values permitting them to quickly reduce concentration level of Pb<sup>2+</sup>, Hg<sup>2+</sup> below permissible limit (Pb=0-15 µg/L, Hg=1 -10 µg/L). EDX, FTIR analysis revealed that Pb<sup>2+</sup>, Hg<sup>2+</sup> bound through weak interactions. Results presented here have shown extraordinary potential with high environmental remediation performance having 99.5% and 98.1% removal efficiency for lead & mercury respectively. Results revealed that adsorbents have same organic linker that identifies same morphology required for adsorption. The difference in adsorption capacity and porosity (ZIF-8 = 937&1370m<sup>2</sup>/g, ZIF-67 = 1289&1889m<sup>2</sup>/g) are deliberately caused due to presence of metal atoms having different electronic distribution, as cobalt in ZIF-67 and in case of ZIF-8 zinc metal.

**Keywords:** ZIF-67, ZIF-8, Water purification, Central metal effect

### **STEMS013: EXPLORING THE INFLUENCE OF CRITICAL PARAMETERS FOR THE EFFECTIVE SYNTHESIS OF HIGH-QUALITY 2D-MXENE**

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Recently, a new class of 2-dimensional (2D) materials, called MXene, has been introduced that consists of transition metal carbides and nitrides/carbonitrides layers. MXene, a multifunctional material with hydrophilic nature, excellent electrical conductivity and chemical stabilities, can be applied in diverse research fields such as energy harvesting and its storage, water purification, thermal interfaces as well as in gas sensing. To achieve the best quality of MXene, optimization of some important synthetic parameters is highly needed such as optimized etchant concentration to remove ‘A’ element from the MAX phase. Moreover, sonication time is also an important parameter to delaminate MXene flakes which leads to excellent exfoliation. Besides, there is a need to obtain that particular solvent through which intercalation can be done and a minimum thickness of MXene flakes can be obtained. In this work, we optimized the abovementioned critical parameters for the synthesis of high-quality MXene. Our results clearly explain the variations in the quality of MXene flakes under applied various etchant concentrations, solvents for better intercalation and

sonication for different times. Our results suggest that 30% HF as an etchant, DMSO as a solvent and 135 minutes' sonication time are effective parameters for the synthesis of good quality MXene. We expect that this report will be helpful for the young research community to synthesize high-quality MXene with the required properties.

#### **STEMS014: STUDY OF PHOTOCATALYTIC BEHAVIOR AND CHARACTERIZATION OF BI-DOPED/SUBSTITUTED LI-CO SPINEL FERRITES**

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The photocatalytic ability of the Li-Co ferrites was improved by their doping with Bi which made them better photocatalysts for the degradation of soluble toxic dyes. For the synthesis of different compositions of Bi Doped Lithium-Cobalt Ferrites Micro-Emulsion, method was used. X-ray diffraction (XRD) analysis confirmed its spinel structure. Characterization is done by using different techniques like Fourier transform infrared (FTIR), scanning electron microscopy (SEM), Energy Dispersive X-Ray Analysis (EDX), etc. Photocatalytic behavior is studied by the degradation of different dyes in the presence of sunlight and satisfactory results were obtained. It is beneficial to use these ferrites for the degradation of soluble dyes because of their magnetic nature they can be recovered easily afterward that's why they might be potential candidates for the photocatalytic degradation of toxic substances like soluble dyes from industrial wastes.

#### **STEMS015: Synthesis, Characterization and Application study of Tungsten oxide/ MXene nancomposite**

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Synthesis of such composites of tungsten oxide (WO<sub>3</sub>) which can improve its photocatalytic and electrochemical applications is a major interest of scientists. Tungsten oxide has been synthesized by an easy and cost-effective hydrothermal method and its composites with MXene (having different percentage compositions) were prepared through the sonication method. The synthesized tungsten oxide and its composites were characterized for their structure and morphology by X-ray diffraction (XRD), scanning electron microscopy (SEM), Fourier transform infrared (FTIR), Energy Dispersive X-Ray Analysis (EDX), and Brunauer–Emmett–Teller (BET). Photocatalytic activity of as-synthesized samples was carried out for the degradation of methylene blue under irradiation with visible light and it was noticed that the composite having a high percentage of MXene shows three-fold photocatalytic and electrochemical applications as compared to pure tungsten oxide. So, it acts as the best photocatalyst that can be used for the degradation of toxic dyes usually present in textile effluents. Also, the diffusion coefficient of WO<sub>3</sub> increases considerably with the presence of MXene, which is suitable for its application in energy storage devices.

#### **STEMS016: SYNTHESIS OF MODIFIED CHITOSAN POLYMERS FOR EFFICIENT CONTROL ON RELEASE KINETICS OF IBUPROFEN**

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The efficiency of therapeutics was limited by many biological barriers of the gastrointestinal (GI) tract. Polymers have played an integral role in the advancement of drug delivery. Chitosan is one of the multifunctional natural polymers and also used in drug delivery system because of its biocompatibility and biodegradability. In this study, chitosan in presence of methyl acrylate, acrylic acid enhanced the drug loading and release efficiency of nanoparticles. Ibuprofen loaded chitosan nanopolymer shows a slow/controlled release of drug from polymeric matrix in buffer solutions. Release kinetics of drug was studied at different pH solutions (1.2, 7, 8 and 9.22). The results of drug release showed high release rate at pH 7 and 8. Within 16 hours, almost 50% of the drug was released from chitosan nanoparticles at pH 8 i.e. pH of colon in GI Tract. Using SEM, FTIR, XRD and TGA, formation of the sample was confirmed. FTIR confirms presence of –NH<sub>2</sub>, OH-, C-H, C-O and C=O functional groups of chitosan nanoparticles. SEM identifies the porous nature of chitosan nanopolymer with partially rough surface. XRD confirms the amorphous nature of chitosan nanopolymer. TGA determines the thermal stability of chitosan nanoparticles up to 500°C.

**Keywords:** Chitosan, methyl acrylate, acrylic acid, pH sensitive nanopolymer, Controlled drug delivery system.

### **STEMS017: SYNTHESIS OF ULTRATHIN MnO<sub>2</sub> NANOWIRE-INTERCALATED 2D-MXENES FOR HIGH-PERFORMANCE HYBRID SUPERCAPACITOR**

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Recently, the MXene itself and its composites with various metal oxides have shown excellent electrochemical performance due to the presence of multiple oxidation states. However, the restacking of MXene layers and poor electrical conductivity of metal oxides are major bottlenecks in their effective electrochemical transport, when they are applied individually. Herein, we report a novel manganese oxide/MXene (MnO<sub>2</sub>/MXene) composite material to overcome these critical issues. Sub-50 nm-thick MnO<sub>2</sub> nanowires (NWRs) were introduced inside the MXene to effectively stop the restacking as well as to increase the surface area of the supercapacitor (SC) electrode material. The special control on the thickness of NWRs is not only providing an opportunity to adjust them inside the MXene layers but also giving a high surface area. Electrochemical studies suggested that the MnO<sub>2</sub>/MXene composite behaves as an excellent electrode material for hybrid SCs, as compared to individual MXene and MnO<sub>2</sub>. Maximum specific capacitance (C<sub>sp</sub>) of MXene, MnO<sub>2</sub> NWRs, and MnO<sub>2</sub>/MXene composite was observed to be about 527.8, 337.5, and 611.5 F/g, respectively. The calculated specific capacity of the MnO<sub>2</sub>/MXene composite was about 489.5 C/g at 1 A/g, which shows better performance as an electrode material for energy storage devices. The synthesized electrode material demonstrated excellent capacitance retention of about 96% up to 1000 cycles.

### **STEMS018: (K, L)–ANONYMITY OF WHEEL RELATED SOCIAL GRAPHS MEASURED ON THE BASE OF K–METRIC ANTIDIMENSION**

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**Research Objectives:** Find out the  $(k,l)$ -anonymity of wheel related social graphs measured on the basis of  $k$ -metric antidimension. **Future Scope:** For the study and valuation of social graphs, which effects on an extensive range of applications such as community decision making support and recommender systems, a novel privacy measure the  $(k, l)$ -anonymity, is highly recommended to sustain the resistance of a social graph  $G$  to active attacks. **Methodology:** In this regard, this privacy measure, called the  $(k, l)$ -anonymity, is used from the last few years on the base of  $k$ -metric antidimension of  $G$  in which  $l$  is the maximum number of attacker nodes defining the  $k$ -metric antidimension of  $G$  for a smallest positive integer  $k$ . The  $k$ -metric antidimension of  $G$  is the smallest number of attacker nodes less than or equal to  $l$  such that  $k$  other nodes in  $G$  cannot be uniquely identified by the attacker nodes. In this paper, we consider four social graphs, namely Jahangir graphs, helm graphs, flower graphs and sun flower graphs. **Findings:** By determining their  $k$ -metric antidimension, we prove that each social graph of these families is the maximum degree metric antidimensional, where the degree of a vertex in a graph is the the number of vertices linked with that vertex.

**Keywords:** Metric;  $k$  antimetric generator;  $k$  metric antidimension ;  $(k, l)$  anonymity; wheel re- lated graphs.

## **STEMS019: AN OVERVIEW OF COMMON DISEASES OF CAMELS IN PAKISTAN**

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Dromedary camel (*Camelus dromedaries*) is found in Pakistan with 21 breeds and its population is highest in Baluchistan (41%). They have been neglected among livestock species, in its disease diagnosis, which may be since most often camels are resistant, but there are some diseases to which they are sensitive like; parasitism, brucellosis, subclinical mastitis, pox, enterotoxaemia and mange, anthrax, overeating disease, supportive hepatitis, calf scour and anaplasmosis, HS, PPR, pneumonic plaque and glanders. Overeating disease is rarely observed in camels and can produce diarrhea, and this disease shows marked nervous signs such as convulsions etc. The clinical manifestation of calf scours are same as in other ruminants as diarrhea, dehydration, nervous signs and death within one month of age. Anaplasmosis is also reported with presence of ticks on animal. Pyrexia, pneumonia, rapid pulse, increased respiration rate and dyspnea are not differential signs between different respiratory diseases. Hemorrhagic septicemia (HS) infects very large population of camels with *P. multocida* type B having less severity to camels. They do not exhibit any marked severity by glanders. It can be concluded that mostly each disease has some clinical signs and pathological lesions that are related to it, which can be used for management of a single case or outbreak at initial stages, till no laboratory confirmation is achieved. There is need of the developmental specie specific diagnostic biologicals, drugs and vaccines to cope up with disease outbreaks before the time that will realize us that we are too late.

## **STEMS020: BRUCELLOSIS: A ZONOTIC REEMERGING DISEASE: LIMITATIONS OF DIAGNOSTIC AND MONITERING APPROACHES**

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Brucellosis is the second most important zoonotic disease of the world after tuberculosis, infecting all kinds of animals as wildlife, livestock, and marines with exception of equidae family, but there is still a potential of infecting them with *B. abortus* and *B. suis*. Veterinary and paraveterinary staff is more prone to this infection as direct contact is its main source of spread. In remote areas, where women are involved in animal handling, can be infected and can transmit it to their children, immunocompromised persons and the elderly people. Elusiveness and hazardous nature of the pathogen calls for Serological testing, that cannot detect brucellosis due to non-significant levels of antibodies to the sub-acute *Brucella* infected ones that limits the application of screening, which is mainly done by testing for serum agglutination against Rose Bengal dye and competitive ELISA, or non-specifically testing for Immunoglobulins using standardized agglutination tests. Specific testing without having to culture is possible via Polymerase Chain Reaction and its various updated versions. Loop mediated Isothermal amplification Assay, whole genome sequencing and other

omics can be used for the diagnosis of brucellosis in various species and in this way host specificity of some Brucella strains be identified and subsequent pathogenesis studies for development and employment of appropriate control strategies be opted. A due consideration should also be paid on the molecular epidemiological perspectives so that the factor of genetic variability of different strains of Brucella cannot be underestimated. There is also a vacuum in the field of monitoring of effectiveness of treatment to the infected ones, that can be achieved by tracing and standardizing the biomarkers of this disease with acute phase proteins and adaptive immunity as an example.

### **STEMS021: VALOSIN-CONTAINING PROTEIN (LIVCP)/P97; A PHILANTHROPIST TO LEISHMANIA**

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Failure of cell-mediated immunity results in ingested amastigote by Phlebotomine sand fly vector, transformation and binary fission of promastigote in the insect gut to propagate ovoid intraphagocytic (amastigote) Leishmania of dog to humans resulting chronic and visceral (kala-azar) leishmaniasis; 2nd most fatal tropical disease after malaria which is diagnosed by amastigote from skin scrapings with

haemolytic anaemia, skin ulcers, alopecia, eczema and cachexia. Cell-mediated cytotoxic T cells destroy infected macrophages or by the soluble products of sensitized T cells 'activating' macrophages to a point where they are able to destroy their intracellular parasites and D1s' heat induction to initiate the D2s' ATPase of 97-kDa valosin-containing protein (VCP) makes it capable to target the ubiquitinated nuclear factor  $\kappa$ B inhibitor to the proteasome for degradation on one hand and prone the cell to amastogote development on the other hand too. There is a need to elucidate the pathogenesis of these genes that are hijacking our cellular machinery and to develop an effective drug or vaccine against it along with other phagocytic hijackers as Hepatozoon canis and Encephalitozoon cuniculi instead of unempirical use of alluprinol and antimonials.

## **STEMS022: VACCINATION OF A POTENTIAL PANDEMIC OF FUTURE “AVIAN INFLUENZA” IN PAKISTAN**

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Avian Influenza infects one billion people with 500,000 deaths per annum. 100 million peoples were the victims of pandemic of this disease in 1918–1919. Inactivated (egg based, cell based and adjuvanted), live (egg based and cell based), next generation vaccines (recombinant

proteins, virus like proteins, vector based, DNA based, universal) are different types of vaccines proposed against this disease. OIE recommends only inactivated Influenza-A virus vaccine from HPAI, H5/H7 LPAI or non-H5/H7 Influenza-A. Pakistan uses inactivated vaccine by inoculating H5N1 (A/Chicken/Pakistan /NARC–2238/06) influenza A virus of low pathogenicity as 0.1 ml of 10<sup>3</sup>–10<sup>4</sup> EID<sub>50</sub> dilution into each allantoic cavity of 9- to 11-day-old embryonated SPF or SAN chicken eggs and is inactivated and emulsified. Potency is monitored by HI titer on eggs that should be greater than 1/128 to provide reduction in challenge virus replication and shedding for at least 1 year. Efficacy is monitored by challenging 106 mean chicken embryo infectious dose of HPAI to > 3 weeks vaccinated bird that should show 80% protection. Safety is monitored by administration of double dose to ten 3-week-old birds, and these shouldn't have clinical signs for 2 weeks. Each dose should have 50 PD<sub>50</sub> or 3 µg of haemagglutinin. Live influenza vaccines has potential to create more pathogenic field viruses through direct interspecies transmission or as a result of molecular exchanges between influenza viruses that already infect humans as many countries had reported HPAI and H5/H7 LPAI viruses to become endemic in their vaccinated poultry populations that resulted in both antigenic and genetic changes in the virus. Evolution of HA protein through antigenic shift can lead to a pandemic, provided that it has power for zoonotic power of replication and transmission—that humans faced in 2009 by H1N1.

### **STEMS023: CAMEL BRUCELLOSIS: A ZOONOTIC REEMERGING DISEASE: LIMITATIONS OF DIAGNOSTIC AND MONITERING APPROCHES**

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Dromedary camel is found in Pakistan with 21 breeds and its population is soaring in Baluchistan (41%). They have been forsaken among livestock species in their disease diagnostic regime like; parasitism, brucellosis, anaplasmosis, HS and FMD. Overeating disease is rarely observed in camels. Anaplasmosis is also reported with presence of ticks on animal. Hemorrhagic septicemia (HS) infects very large population of camels with *P. multocida* type B having less severity to camels. They do not exhibit any marked severity by glanders. Brucellosis is the second most important zoonotic disease of the world after tuberculosis, infecting all kinds of animals as wildlife, livestock and marines with personals having direct contact with the body fluids of infected ones as a source to spread the disease. The elusive intracellular nature of the pathogen dodges the serological testing due to non-significant levels of antibodies to the sub-acute *Brucella* infected ones. Specific testing without having to culture is possible via Loop mediated Isothermal Amplification Polymerase Chain Reaction, whole genome sequencing and other omics for host specificity of *Brucella* strains. A due consideration should also be paid on the molecular epidemiological perspectives so that the factor of genetic variability of different strains of *Brucella* cannot be underestimated. There is a vacuum in the field of development of specie specific diagnostic biologicals, drugs, vaccines, monitoring regimes and standardizing the biomarkers of this disease with acute phase proteins and cell mediated immunity as an example.

## **STEMS024: POINT PREVALENCE OF DISEASES IN CAMELS OF BAHAWALNAGAR, PUNJAB, PAKISTAN**

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Twenty-one breeds of *Camelus dromedaries* with two main types as riverine and mountainous having yield 10-15 liters of milk per day are found in Pakistan with highest population (41%) in Baluchistan. To identify and combat the camel health issues, campaign was launched that comprises deworming of camels and an active disease surveillance in district Bahawalnagar to estimate the magnitude and impact of parasitism, sub clinical mastitis, brucellosis and mineral analysis on camel populations of Bahawalnagar district. Fecal, blood, milk, skin scraping, and serum samples were collected throughout the District. The disease load (point prevalence) with respect to endoparasites was 46%, hemo-parasites was 05%, and Overall prevalence of brucellosis was 08%. Prevalence of ectoparasites is estimated to be approximately 11% and prevalence of subclinical mastitis is calculated as 66%. It was concluded that there should be the extension services to the farmers for motivation of deworming to control the parasitism that is leading to the sub optimal production of these valuable animals.

## **STEMS025: BIOTECHNOLOGY APPROACHES TO INSIGHT IN THE MEDICAL AND VETERINARY SECTORS**

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The dependence of livestock industry on biotechnology is increasing to boost animal production. The ever-increasing studies regarding function, structure, and metabolism of DNA give rise to recombinant DNA technology dealing with the alterations in DNA to serve society in a better way. Awareness of animal genetics is substantial approach to use in biotechnology to enhance animal breeding. Genomics, bioinformatics, and proteomics are also applied in animal biotechnology. The transgenic expertise enhances meat and milk production in farm animals. Furthermore, biotechnology assists in xenotransplantation from the animals to the humans, cloning of animals, in-vitro cultured meat production and in the diagnosis and treatment of various animal diseases like, Avian Flu, FMD, Bovine Spongiform Encephalopathy and Swine fever. The more biotechnology inventions include bioassays like DNA vaccines, gene therapy technology for animal diseases, RNA interfering. Technique for the research and development, molecular diagnosis method in the Veterinary practice, PCR technology, immunosorbent, and fluorescent hybridization assays. Currently, biosensors and biochip-based assays also assisting in the Veterinary diagnosis. Since last decade, germ cells

amendment has become key components for the transgenic animal's production. Three fundamentals must be fulfilled for the successful transgenic animal's production: the handling of several types of the pluripotent cells, the handling of genes of interest, and an improved efficacy in germ-line production. The knowledge of the molecular and cellular signals that control the germ cells, along with the development of a stable method of gene delivery, will make these species indispensable tools for the biotechnological applications.

**Keywords:** Animal biotechnology; Recombinant DNA; Vaccines; Biosensors, Transgenic Animals.

## **STEMS026: RECENT TRENDS IN STEM CELL TECHNOLOGY**

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Stem cell therapy is a very encouraging and contemporary scientific approach. The advancement in line of treatment methods has evoked great expectations. Stem cells are nonspecialized tissues of the human body that can be transformed into any cell of an organism. Stem cells have special characteristics of self-renewal, pluripotency and

differentiation, which are responsible for replenishment of tissue or organ. Stem cells are effectively used as a curative tool in targeting of drugs and regenerative medicine—from treatment of numerous diseases related to the nervous system and malignancies to innate abnormalities. Multipotent hematopoietic stem cell (HSC) transplantation is recently the most popular stem cell therapy. Stem cells can be used in new drug testing. Each trial on alive cells can be carried out in a safe way on specified differentiated tissues from pluripotent cells. Mostly, such conditions that are treated from such curative therapy are macular degeneration strokes, osteoarthritis, neurodegenerative disorders and diabetes. Because of this method, now it is feasible to give rise to healthy cardiac muscle cells and later transfer them to patients with cardiac disease. Induced pluripotent stem cells can be transformed into the precursor cells of every neural cell type at the point of spinal cord damage, and have huge applied capability for repairment of spinal cord injury. In conclusion, there is a huge future scope and probabilities that stem cell techniques behold for us.

**Keywords:** Stem cells, Drug Testing, Regenerative Medicine, Cardiac Muscle cell transplantation, Spinal cord repairment

### **STEMS027: ASSESSMENT OF DNA DAMAGE INDUCED BY CADMIUM EXPOSURE IN THE ERYTHROCYTES OF CIRRHINA MRIGALA**

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In natural environment, exposure to metallic ions may lead to abnormal histological and physiological responses and induce adverse effects on the reproduction, development, behaviour and ultimately growth of aquatic organisms. Heavy metals cause genotoxicity in the fish either by direct damage to the DNA or indirectly through oxidative

stress/damage, inhibiting DNA repair mechanisms and interacting with tumor suppressor proteins. During chronic exposure of cadmium, for 84 days, the fish peripheral erythrocytes were collected fortnightly (14, 28, 42, 56, 70 and 84 days) to observe the dose and time dependent DNA damage in the *Cirrhina mrigala* through comet assay technique. DNA damage was measured in terms of percentage damaged nuclei, genetic damage index (GDI), and cumulative tail lengths (CTL). Peripheral erythrocytes of *Cirrhina mrigala* exhibited significantly variable DNA damage after exposure to various concentrations (2/3rd, 1/3rd, 1/4th, and 1/5th LC50) of cadmium, negative and positive controls for 84 days. Exposure of fish to positive control caused significantly higher nuclear damage while negative control caused least damage. However, the GDI values induced by 2/3rd of LC50 exposure and positive control were higher but non-significant. Among various exposure concentrations, 2/3rd LC50 caused significantly maximum CTL to the comets while it was significantly minimum due to negative control. During 84 days exposure period, the damaged nuclei (%) and GDI value were significantly lower after 14 days of exposure while 56 and 70 days exposure based genetic damage index values were non-significant. Cadmium caused significantly higher damage to the nuclei while CTLs of comets was  $134.63 \pm 74.43 \mu\text{m}$  after 70 days of exposure. In conclusion, cadmium exposure caused significantly variable dose and time dependent DNA damage in the peripheral erythrocytes of *Cirrhina mrigala*.

**STEMS028: HISTOPATHOLOGICAL AND HEMATOLOGICAL ALTERATIONS CAUSED BY SALT STRESS IN FRESHWATER FISH CTENOPHARYNGODON IDELLA (GRASS CARP)**

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Grass carp *Ctenopharyngodon idella* is one of the important fish species which is an important source of protein. Grass carp is found in natural freshwater and cultivated artificially in lakes and ponds in many countries of the world. Present study was aimed at investigating the effect of salt stress on hematological and histopathological parameters of *C. Idella*. Grass carp (n=25) of ~180G weight were kept in the aquarium under ideal conditions (temperature: 25°C and pH: 7), fish were acclimatized for four days, prior to experiment. They were divided into five experimental groups i.e. S0, S2, S4, S6, and S8 with salt concentrations of 0, 2, 4, 6 and 8 G/L respectively. After four weeks of salt exposure, hematology and histopathology of gills, heart and kidneys were performed. A significant ( $P \leq 0.05$ ) rise in white blood count and platelet count, while significant ( $P \leq 0.05$ ) decrease in red blood count, hemoglobin concentration and hematocrit % was observed with the rise of salt concentration. Proliferation of gill chloride cells, gill hyperplasia, fusion of secondary lamella, removal of the epithelial membrane and degeneration of secondary lamella were observed in gills. In kidneys, swelling and clustering of glomeruli, increased Bowman's spaces, increased tubular spaces and tubular cell necrosis were observed in groups with higher salt concentrations. In heart, degeneration of atrial tissue and increased ventricular spacing was observed. Histopathological observations were more pronounced in groups with higher salt concentrations. Taken together, it is concluded that higher salinity may cause different abnormalities in osmoregulatory organs and disturb the hemotological indices in grass carp. Findings of this study may be helpful in developing solution for minimizing the effects of salinity in grass carp.

**Key Words:** Grass carp, salinity, hematology, histopathology

## **STEMS029: DEVELOPMENT AND CHARACTERIZATION OF NIOSOMAL GEL OF FUSIDIC ACID**

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Niosomes are multilamellar vesicles, that efficiently deliver active substance into skin systemic circulation or skin layers. They are used in topical drug delivery system to enhance the skin permeation of active substance. So, the purpose of this study was to develop a niosomal gel of fusidic acid to increase its skin permeation. Fusidic acid is used in skin and soft-tissue infections such as erythrasma, impetigo, psoriasis etc. Different formulations of niosomes of fusidic acid were designed by varying the cholesterol to surfactant ratio. Formulations containing fusidic acid, cholesterol, dihexadecyl pyridinium chloride, span 60 or tween 60 were prepared by thin film hydration method in rotary evaporator. The thin film formed in round bottom flask was rehydrated by phosphate buffer saline of pH 7.2. The niosomes formed were characterized through entrapment efficiency, size, polydispersity index and zeta potential. The S3 formulation containing span 60 showed the highest entrapment efficiency of niosomes so it was incorporated into Carbopol gel. The pH was determined of niosomal gel of fusidic acid at different temperatures. Spreadability, rheological and ex-vivo permeation studies were also conducted. The results of ex-vivo permeation studies showed high permeation of fusidic acid when gel was applied to an albino rat skin. According to the results and previous studies of niosomes, it can be concluded that niosomes enhanced the permeation of fusidic acid through the skin.

**Keywords:** Niosomes, Fusidic Acid, Ex-vivo Permeation, Gel, Rotary Evaporator

### **STEMS030: ANTIMICROBIAL ASSAY OF REPTILIAN OIL CROSSOBAMON ORIENTALIS AND EUTROPIS MACULARIA**

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This study was conducted to analyse the antimicrobial activity of reptilian oil from selected species. Oil from body fat of two species viz Crossobamon orientalis and Eutropis macularia was obtained after autopsy. Four oil extracts were prepared with solvents viz methanol, ethyl acetate, butanol and n-hexane. Three commonly occurring bacterial strains Escherichia coli, Pseudomonas aeruginosa and Staphylococcus aureus were used to check antibacterial activity of four oil extracts prepared with different solvents. Pure oil was also used as negative control in one treatment. The antibacterial activity was determined by Disc Diffusion method and MIC (minimum inhibition concentration) was determined by using round bottom 96-well micro titre plate method. The butanolic extract showed best antibacterial potential against all the bacterial strains followed by methanol and ethyl acetate extract against two bacterial strains. While n-hexane showed no results in all the cases. The antiviral activity of four solvents with E. macularia was performed against Infectious Bronchitis Virus (IBV) and Avian Influenza Virus (AIV) H9N2 strain. For this purpose, Heme Agglutination (HA) test was performed to estimate the titre of viruses. The viral propagation was done in serial passages and antiviral assays were performed the HA titre with was the highest peak was considered effective in activity against the targeted viruses.

**Keywords:** Autopsy, Heme-agglutination (HA), Disc Diffusion

**STEMS031: MITOCHONDRIAL INJURY CAUSED BY TRIPTOLIDE IN RAT LIVER TISSUE**

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Triptolide, is an active ingredient of Chinese herbal plant TWHF. It has various pharmacological activities, but it also has multi-organ toxicities i.e. immunotoxicity, nephrotoxicity and hepatotoxicity. Mitochondrial dynamics, a phenomenon controlled by mitochondrial fusion and fission events, plays an important role in mitochondrial quality control and homeostasis. Mitochondrial fusion involves a combination of outer mitochondrial membrane and inner mitochondrial membrane of adjacent mitochondria. Several proteins involve in the process of mitochondrial fusion i.e., Mfn1 and Mfn2 are involved in outer mitochondrial membrane fusion and Opa1 takes part in inner mitochondrial membrane fusion. Triptolide treatment to female Wistar rat liver tissues did not change the expression of Mfn2 and Opa1 fusion proteins but decreased Mfn1 protein level. Loss of either Mfn1 or Mfn2 causes disturbance in mitochondrial fusion rates and a decrease in mitochondrial length. Mitochondrial fission is characterized by mitochondrial constriction when endoplasmic reticulum encircles mitochondria, followed by the cytosolic shifting of Drp1, protein having GTPase activity, into mitochondria. Although activation of Fis1 fission protein causes mitochondrial fission, its inhibition did not affect

either recruitment of Drp1 to mitochondria or mitochondrial fission itself. Exposure of triptolide to rat liver tissues did not show any effect on Fis1 protein level but increased the Drp1 protein level. Taken together, our results showed that triptolide caused an imbalance in mitochondrial dynamics in liver tissues of female wistar rats.

**Keywords:** Tripterygium wilfordii Hook f. (TWHF), Triptolide, hepatotoxicity, female Wistar rats, Mitochondria

**STEMS032: SEROLOGICAL DETECTION OF BRUCELLOSIS AMONG CATTLE (BUFFALOES AND COWS) BY ROSE BENGAL PLATE TEST IN AND AROUND DISTRICT BAHAWALPUR, PUNJAB PAKISTAN**

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Brucellosis is recognized as one of the major zoonotic diseases in the world. The present study was designed to evaluate the serological detection and related risk factors of bovine brucellosis in cattle (cows and buffaloes) in and around the area of district Bahawalpur, Punjab Pakistan. 300 sera were obtained after the collection of blood samples from 230 cows and 70 buffaloes. A questionnaire was used to collect the data about the risk factor variables i.e. species, breed, location, gender, size of the herd, cleaning of the coral, abortion history, pregnancy status and lactation period. Rose Bengal Plate Test was utilized for the detection of Brucella infection in the cattle sera. There were 11(3.6%) serum samples found positive for the brucellosis. Out of these, 6 (2.6%) samples of cows and 5 (7.14%) samples of buffaloes were positive for infection. On the basis of binary logistic regression analysis, abortion history and the size of herd were found to be potential risk factors ( $p < 0.05$ ) for the seropositivity of bovine brucellosis.

**Key words:** Serological, brucellosis, Bahawalpur, Rose Bengal Plate Test, cattle

**STEMS033: CROSS-SECTIONAL SURVEY: EVALUATING KNOWLEDGE AND PRACTICES OF GOUT INFLICTED PATIENTS DWELLING IN LAHORE, PAKISTAN**

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Gout stands as predominant type of inflammatory arthropathy with an ever-increasing incident rate over last many years. The undertaken study aims at exploring Lahore residents imposed with gout. With little work previously done in Pakistan, a pretty simple questionnaire was developed for this cross-sectional survey. Further, data were collected and analyzed utilizing SPSS software (IBM, version. 22). A sum of 203 respondents filled in the survey, while the male patients predominated with total of 127 (62.56%). However, a vast majority of patients old and obese. The respondents were found to be suffering in obliviousness, ignoring the joints effected by gout for quite some time. Aftermaths were seen as pain and regarded on the basis of experience, including mild (40.39%)>moderate (31.52%) and >severe (28.07%).The treatment module entailed, 101patients (49.75%) on febuxostat/ Allopurinol / colchicine, 31(15.27%) followed by diet modification. About 185 (91.1%) patients revealed no family history of the disease and 191 (94.1%) patients asserted that their daily routine has been

affected by gout. 190 (93.6%) patients also reported an extra financial burden following treatment with gout. Patients also reported constrained mobility i.e. 173 (85.2%) of total count. Yet 157 (77.3%) patients chose to meet rheumatologist for regular checkup, and 91 (44.8%) got help from the pharmacists. The physical and physiological health of patients were severely affected by gout and has substantial burden with increasing time. With ever increasing data on risk factors and comorbidities of gout may help care providers and affected to have improved gout care strategies.

**Keywords:** Gout; Arthritis; Inflammation; Allopurinol; Hyperuricemia

#### **STEMS034: HEMATOLOGICAL AND BEHAVIORAL STUDY OF COMMON CARP, CYPRINUS CARPIO EXPOSED TO TITANIUM NANOPARTICLES**

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Nanoparticles are widely used in cosmetics, medicinal and electronics industries due to their properties viz. size, surface area, density, shape and morphology. So, these particles have gained much attention. The particles at nano size become more poisonous as compared to their bulk forms. The aquatic organisms such as fish which is model organism has enhanced concerns about the potential lethal effect of nanoparticles on human health. The project was aimed for determination of hematological and behavioral parameters of Common Carp (*Cyprinus carpio*) after titanium nanoparticles exposure. Titanium nanoparticles were formed by co-precipitation method. These particles are characterized by scanning electron microscopy, X-ray diffraction,

Fourier-transform infrared, transmission electron microscopy. Nano rods were appeared in XRD pattern and the density was 19m<sup>2</sup>/g showed the spherical shape of nanoparticles. According to the transmission electron microscopy the average particles size of titanium was 16.5nm and the structure was polygonal. Confirmation of attached compound with the nanoparticles was done by FTIR. The 96-hr LC50 of titanium nanoparticles on *Cyprinus carpio* was calculated as 151.83±4.41 mg/L while the lethal concentration was calculated as 269.37±2.11bmg/L. Common carp was used to check the effect of titanium nanoparticles on hematological and behavioral parameters. After the acute exposure sample were taken after each 24hrs. The total duration of experiment was 96hrs and the physico-chemical parameters like Total hardness, Temperature, and pH etc. were checked during the whole research work. After the analysis of blood sample, the hematological parameters i.e. hematocrit, mean content hemoglobin white blood cells, hemoglobin, mean cell volume and red blood cells, were decreased significantly in treated group as in comparison with the control group and the value of Mean corpuscular hemoglobin content was increased. In the treated group the behavioral parameters were excited like hyperactivity, convulsion, and aggression. The swimming rate and fin movement were decreased, and the equilibrium status was disturbed. Key words: Acute toxicity; Titanium nanoparticles; Hematological parameters; behavioral parameters; *Cyprinus carpio*.

### **STEMS035: OXIDATIVE STRESS AND BEHAVIORAL RESPONSES OF CATLA CATLA EXPOSED TO TITANIUM DIOXIDE NANOPARTICLES**

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Nanoparticles are manufactured through nanotechnology that manipulates matter at nanoscale, abundantly used in variance science fields because of its high suitability. Due to their extensive use these particles appear in aquatic ecosystem. Therefore, the current research was conducted on the oxidative stress and behavioral responses of *Catla catla* exposed to titanium dioxide nanoparticles. The titanium dioxide nanoparticles were formed by the sol gel method and characterized by different methods such as, X-ray Diffraction, Fourier Transform Infrared Spectroscopy, Scanning Electron Microscopy and Transmission Electron Microscopy. Fish having the same weight and length were selected for experimental trial. 96-hr acute toxicity of TiO<sub>2</sub>-NPs in *Catla catla* was checked by applying different concentration. Oxidative stress in terms of peroxidase and catalase were determined in selected organs of fish viz intestine, muscle, liver and gills after acute and chronic exposure. During acute trial, fish were exposed to 96-hr LC<sub>50</sub> concentration of TiO<sub>2</sub> NPs for about four days and sampling was done after each 24 hours. The activity of catalase and peroxidase was increased significantly in selected organs of *Catla catla* as compared to control group and followed the order liver>gills>intestine>muscle. In chronic trail the fish, *Catla catla* were exposed to 1/3rd of 96-hr LC<sub>50</sub> concentration for about one month. Maximum CAT and POD activity (225.03±38.50mg/L, 1.34±0.78mg/L) were absorbed after 1st fortnight. As the exposure duration increases CAT and POD activity decreased significantly (171.48±17.98mg/L, 1.00±0.63mg/L). Behavioral alterations were also observed during the chronic exposure of TiO<sub>2</sub>-NPs. Acute toxicity was analyzed through the application of probit analysis method. Statistically data on different variables was examined through analysis of variance and correlation (ANCOVA). Overall results showed that oxidative stress was the induced toxicity mechanism of TiO<sub>2</sub>-NPs in aquatic environment.

**Keywords:** TiO<sub>2</sub>-NPs, acute toxicity, catalase, peroxidase, chronic toxicity

**STEMS036: ASSESSMENT OF TRADITIONAL ANOMALIES ASSOCIATED WITH FOLATE ANTAGONIST METHOTREXATE IN CHICK EMBRYO**

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Methotrexate (MTX) analogue of folic acid is an anti-cancerous drug that has been used from many years for treatment of important diseases like rheumatoid arthritis and ectopic pregnancy. Objectives: This study was performed to evaluate the gross anomalies of chicken embryos after the exposure of MTX on different development stages. Methodology: A total of 144 eggs were divided into six groups with eight eggs in each group and exposed different dose concentrations viz, control (group 1) 5 µl (Group 2), 10 µl (Group 3), 15 µl (Group 4), 20 µl (Group 5), 25 µl (Group 6). Findings: Gross anomalies of chick embryo regarding embryo's body weight, body length, wings length, hind limbs length, beak length and head diameter were examined on 12th, 15th and 18th days after incubation. Research Outcomes: The results of mean values of 12th, 15th and 18th day old chick embryos exposed to 5 µl and 10 µl MTX showed non-significant effect ( $P > 0.05$ ) on embryo's body weight, body length, wings length, hind limbs length, beak length and head diameter of all groups with respect to control. While MTX with concentration of 15 µl showed significant effect ( $P < 0.05$ ) on the hind limb length of chick embryo. Group 3 individuals (15 µl) were found with removed hairs on the neck area, slow movement of embryo after hatching and poor feeding in chicks. Moreover, among most frequent abnormalities, hind limb lengths, body length and body weight at 15 µl were found reduced in size. Group 4 and group 5 with 20 µl and 25 µl dose concentration respectively caused

complete termination of chick embryos. Future Scope: Many pregnant females may have bad effects on embryo development while using this anti-cancerous & anti-arthritis drug.

**Keywords:** Chick embryo; embryonic stages; Gross abnormalities; Mortality doses; Methotrexate

### **STEMS037: CHANGES IN CATALASE AND PEROXIDASE ACTIVITY IN FISH COMMON CARP EXPOSED TO COPPER NANOPARTICLES**

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Nanoparticles are the essential component of the environment that affect the natural aquatic ecosystem and also human. Every aerobic organism possesses antioxidant defence system for protection from the oxidative stress. Research was designed to check the changes in catalase and peroxidase activities in different fish organs (Liver, gills, kidney and muscles) of common carp after acute exposure of copper nanoparticles. Samples were collected from natural breeding ponds. Copper nanoparticles were prepared by co-precipitation method and characterized by different techniques such as Transmission electron microscopy, Scanning electron microscopy, FT-IR, X-ray diffraction method (XRD) and UV-Visible spectroscopy. The LC<sub>50</sub> of Cu nanoparticle was checked after 96-hr acute exposure by probit analysis method. Copper nanoparticles were time dependent with the activities of catalase and peroxidase, as the time increased the activities of these enzymes also increased. After acute exposure, the activity of catalase and peroxidase showed different results in fish organs liver > gills > kidney > muscles. The findings concluded that the toxicity mechanism

of Cu nanoparticles may be due to the oxidative stress that was caused by these particles.

**Keywords:** Copper nanoparticles, Acute toxicity, Peroxidase, Catalase, Common carp

### **STEMS038: GENETIC CHARACTERIZATION OF BIGHEAD CARP (*HYPOPHthalmichthys nobilis*) POPULATIONS IN RIVER INDUS BY USING MOLECULAR MARKERS**

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Genetic diversity provides potential to adopt the environmental challenges necessary for the species' fitness. During last several decades, anthropogenic interruptions have become the major source for the deterioration of genetic integrity of fish species. The proposed study was conducted to determine genetic status of Bighead Carp (*Hypophthalmichthys nobilis*) from five populations collected from Jinnah Barrage, Chasma Barrage, Taunsa Barrage, Ghazi Ghat and Guddu Barrage using 5 microsatellite markers in a total 150 individuals ( $n=30$  individuals per population). The level of genetic diversity in terms of the average alleles number ( $N_a$ ), allelic richness ( $A_r$ ), number of effective alleles ( $N_{ae}$ ) and heterozygosity ( $H$ ) was observed moderate in all examined populations. The mean values of  $N_a$ ,  $A_r$ ,  $N_{ae}$  and  $H_o$  ranged from 3.200 to 3.600, 3.193 to 3.593, 2.181 to 2.599 and 0.516 to 0.666, respectively in the all populations of *H. nobilis*. The average of expected heterozygosity ( $H_e$ ) values was noted higher as compared to the  $H_o$ . On average, the values of inbreeding coefficient (FIS) in examined populations were found positive except two populations. After correction of significance levels for 25 simultaneous

tests ( $P < 0.05$ ), only three instances in populations of *H. nobilis* were found to depart from Hardy-Weinberg Equilibrium (HWE). The pair-wise estimates of FST revealed moderate population differentiation between the populations. The AMOVA revealed that most of the variation was found within individuals in all populations. Analysis of genetic relatedness among all the examined populations was estimated by constructing UPGMA dendrogram and STRUCTURE admixture model which predicted that the populations in the same clusters had a close genetic relationship. The inference of this study will be helpful in defining strategies for effective management of *H. nobilis* in natural populations.

**STEMS039: EFFECT OF WATERBORNE NICKEL NANOPARTICLES (NI-NPS) ON LEVEL OF BIOACCUMULATION AND OXIDATIVE STRESS IN TILAPIA**

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The usage of different types of nanoparticles in manufacturing and household applications ultimately end into aquatic ecosystem. Nanoparticles hold potential accumulative and noxious effects on aquatic organisms. To study the bioaccumulation patterns in tilapia, nickel nanoparticles were synthesized by co-precipitation method and characterized through X-ray diffraction (XRD) and Transmission electron microscopy (TEM). Toxicity tests were conducted in separate two phases. During Phase-I the experimental fish *Oreochromis niloticus* was tested to determine its LC<sub>50</sub> and lethal concentration for Ni-NPs. The 96-hr LC<sub>50</sub> of Ni-NPs for *Oreochromis niloticus* was calculated as  $32.64 \pm 2.01 \text{mgL}^{-1}$  (with 95% confidence interval range 28.22-36.4519mgL<sup>-1</sup>) while lethal concentration was computed as

55.92± 3.52mgL<sup>-1</sup> with (95% confidence interval range of 50.20-65.13mgL<sup>-1</sup>). During phase-II the general accumulation patterns and oxidative stress terms of Ni-NPs in different body organs of *Oreochromis niloticus* were checked after chronic exposure for 30 days and sampling was done fortnightly. Accumulation pattern followed the order: liver > gills > kidney > skin > muscle and no significant accumulation was observed in control group of fish. The catalase activity in fish was significantly inhibited while activity of superoxide dismutase activity increased significantly because of nickel nanoparticles. Physico-chemical parameters were monitored throughout the experimental study. Further ecological evaluation was made concerning the risk of Ni-NPs on aquatic environment.

**Keywords:** Bioaccumulation, Tilapia, Nickel nanoparticles, Lethal concentration, Acute exposure; Oxidative stress

#### **STEMS040: HUMAN INFECTION WITH AVIAN INFLUENZA: ONE HEALTH TASK**

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A review of avian influenza virus that has the capability to infect the human. Humans are generally not infected by the avian influenza A virus, while rare cases of human infection with avian influenza A virus have been documented. Infected birds shed virus in feces, mucous and saliva. Human infection with avian influenza virus occurs through inhalation and when the virus enters into eyes, mouth and nose. Illness in human being ranges from mild to severe. Occasionally transmission of avian influenza virus has been reported from ill person to another person. While it has the opportunity that avian influenza virus A might alter and gain the capability to transmit among peoples, monitor for human infection and individual to individual transmission is tremendously significant for public health. In human avian influenza

virus symptom includes fever, coughing, sore throat, conjunctivitis, nausea, vomiting, abdominal pain and muscle aches, and neurological changes such as seizure and altered mental status. For human infection, Asian lineage H7N9 and H5N1 viral strains are involved. In poultry, avian influenza viruses are circulating, so there is a risk for periodic infection to humans due to contact with infected birds or contaminated environment. Avian influenza continues due to the existing of novel influenza virus A H5N1 in birds. From January 2003 to October 2020, 861 cases of human infection were reported with avian influenza worldwide. AI virus H5N1 reported from 17 countries. Public awareness of potential danger for human health is crucial to avoid infection in people. Surveillance must be continued to observed human cases and initial variation in transmissibility and infectivity of the viruses. Avian influenza virus A is generally diagnosed by collection of swab from the upper respiratory tract of sick people.

**STEMS041: GENETIC STUDY OF HUMAN NEURONAL DEVELOPMENTAL CONTROL GENE PLAYING ROLE IN AGGRESSION AMONG MALTREATED INDIVIDUALS**

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Socio-environmental factors play a vital role in human behavior. Adverse socio-economic factors end in exacerbation of genetic risk for slapped people, for instance ensuing from low socioeconomic background or family with mistreatment history. MAOA-uVNTR and 5-HTTLPR, 2 vital regulators of 5-hydroxytryptamine, play a very important role in dominant human behavior. Objective of this study was to analyze genetic variations of MAOA-uVNTR and 5-HTTLPR on the premise that clear genetic link of aggression and mistreatment existed

for MAOA-uVNTR and 5-HTTLPR within the literature. Polymer samples obtained from blood or buccal swabs of slapped people and management subjects genotyped and their factor varieties and aggression issue score among completely different groups.

**Keywords:** Human Neuronal Developmental Control Gene, Aggression, Maltreated.

### **STEMS042: ASSESSING THE ANTIOXIDANT ACTIVITY OF CATALASE IN LIVER, KIDNEY AND MUSCLE TISSUE OF RIVERINE BAGARIUS BAGARIUS IN RELATION TO METAL BIOACCUMULATION**

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In the last decades, heavy metals caused severe contamination in the aquatic environment leading to oxidative stress in fish. The current study was planned to assess the antioxidant activity of catalase in various organs of *Bagarius bagarius* as influenced by metal bioaccumulation. The fish individuals were collected from five different sites of River Chenab by using gill net. The fish were dissected for obtaining different organs i.e. liver, kidney and muscle tissue. The catalase enzyme was isolated from the organs for the enzyme assay. The catalase enzyme activity in the extracted organs was measured by using Bergmeyer method at 240nm. Accumulation of heavy metals in water and fish organs was analyzed by using absorption spectrophotometer method. This study showed elevated antioxidant activity in fish organs sampled from River Chenab was following liver>kidney>muscles. The concentration of metals (Pb, Cd, Zn, Al, Ni) among five different sites was found in following order Trimmu

headworks > Khanki headworks > Marala headworks > Qadirabad headworks > Chiniot bridge. Level of Pb and Cd was maximum in river Chenab. Bioaccumulation of metals was found maximum for liver, kidney and muscles. Water samples from the sampling sites also showed significant differences in physico-chemical variables for all the studied sites at River Chenab. Significant difference ( $p < 0.05$ ) was observed among all the sites for catalase activity as induced by metal toxicity. This study would be helpful in assessing the impact of metal toxicity on antioxidant defense system of fish.

**Keywords:** Bagarius bagarius, Antioxidant activity, Catalase, River Chenab

### **STEMS043: EFFECT OF DIFFERENT DIETARY PROTEIN, LIPID AND CARBOHYDRATE LEVELS ON THE GROWTH PERFORMANCE AND BLOOD PARAMETER OF FISH, LABEO ROHITA**

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An experiment was carried out to examine the effect of different dietary lipid protein, and carbohydrate levels on growth performance and blood parameters of fish, *Labeo rohita*. Four groups of 20 fish (8.54 g mean weight) were reared in four ponds for 120 days. Feed intake was recorded throughout experiment. Four different treatments having diverse level of protein, lipid and carbohydrate as T0 (control), T1 (33%, 33%, 33%), T2 (40%, 30%, 30%), T3 (50%, 25%, 25%) were prepared and given to the fingerlings. After every fifteen days, specific growth rate was analyzed. The mean estimations of weight gain were recorded as  $14.32 \pm 4.94$ ,  $16.78 \pm 4.76$ ,  $7.27 \pm 2.08$  and  $9.15 \pm 2.06$  for T0,

T1, T2 and T3—respectively. Total length was  $8.05 \pm 1.1$ ,  $9.88 \pm 1.7$ , and  $12.0 \pm 4.0$ ,  $11.3 \pm 3.39$  in T0, T1, T2, and T3 respectively. When the time duration of experiment was completed, different samples of blood taken from the fish caudal vein with the help of needles and syringes of 2ml placed discretely in (EDTA) tube. To find out the difference in concentration of hemoglobin  $10.87 \pm 1.38$ , Mean corpuscular volume  $135.99 \pm 11.7$ , Mean corpuscular hemoglobin concentration  $38.20 \pm 1.06$ , White blood cells  $223.1 \pm 34.6$  the samples obtained from the fish was taken to the laboratory. Highest value of FCR and SGR was observed in T2— which was 4.69 and 1.73 respectively.

#### **STEMS044: EFFICACY OF DIFFERENT FOOD BAITS AND ENTOMOPATHOGENIC FUNGI AGAINST MELON FRUITFLY IN BITTER GOURD**

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Various biotic factors curb the production and prolificness of bitter gourd. Cucurbit fruit fly *Bactrocera cucurbitae* Coquillett is considered as the most prevalent, deleterious and quarantine pest on bitter gourd. Several management alternatives administered to counter the damage caused by cucurbit fruit fly were not sustainable. Microbial biopesticides have been discerned as substitute to other hazardous methods, considering that they have minimal impacts on non-target organisms. Therefore, the current study was designed to assess the efficacy of EPF inoculated food baits against *B. cucurbitae* in laboratory conditions. Infested fruits from fruit fly will be gathered from local area fruit market and taken to the Integrated Pest Management (IPM) Laboratory. From fruits the completely grown maggots will be hopped and pupate later in the given sand. 20% honey

solution will be provided to the adult flies. In the preliminary trial, the adults were subjected to the different food baits. Food baits have three components base bait, admixture and controlled release. The results indicated that food bait having base component banana and soybean hydrolysate were 85–95% more attractive to adult *B. cucurbitae* than others. Then food baits were inoculated with strains of *Beauveria bassiana* and *Metarhizium anisopliae*. Among them *Beauveria bassiana* strains were found to be more effective. Then different concentrations of *Beauveria bassiana* were prepared ranging from  $1 \times 10^6$  to  $1 \times 10^{10}$  spore ml<sup>-1</sup>. These concentrations were than administered through different methods. The mortality recorded through the spore suspension method was lowest than the other two methods. Average mortality of 41.9 to 88.0 % was observed by feeding them EPF inoculated bait and by spraying it with conidia on the body. The highest mortality was caused by  $1 \times 10^8$  spore ml<sup>-1</sup> conidial concentration of *Beauveria bassiana*. Therefore, it was concluded that *Beauveria bassiana* with conidial concentration of  $1 \times 10^8$  spore ml<sup>-1</sup> can be used for control when inoculated with the bait of soybean hydrolysate and banana.

**Keywords:** *Beauveria bassiana*, *Metarhizium anisopliae*, Food baits, Mortality.

#### **STEMS045: FUNGICIDAL POTENTIAL OF FLOWER EXTRACT OF CASSIA FISTULA AGAINST MACROPHOMINA PHASEOLINA AND SCLEROTIUM ROLFSII**

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In this study, the effect of methanolic extract of *Cassia fistula* was studied on growth of two economically highly important fungal species namely *Macrophomina phaseolina* and *Sclerotium rolfsii*. Furthermore, GC-MS analysis of the extract was also done to find out possible antifungal compounds. There is not any report of such studies earlier especially from *Cassia fistula* plants growing in Pakistan. The present study was carried out to investigate the antifungal activity of methanolic extract of flower of *Cassia fistula* L. against two highly destructive soil-borne fungal plant pathogens namely *Macrophomina phaseolina* and *Sclerotium rolfsii*. Extract was prepared by soaking dried flowers of the test plant species in methanol for two weeks, filtration and evaporation on a rotary evaporator. Bioassays carried out with 1.562, 3.125, 6.25, 12.5, 25, and 50 mg mL<sup>-1</sup> concentrations of the extract exhibited 2–36% and 31–56% reduction in biomass of *M. phaseolina* and *S. rolfsii*, respectively. The extract was partitioned with n-hexane followed by chloroform and the later fraction was analyzed by GC-MS that showed presence of 37 compounds. Hexacosane (16.06%) followed by heptacosane (10.94) and benzene, 1,2,3-trimethyl- (8.12%) were recognized as the principal components of chloroform fraction. Compounds namely heptadecane (7.15%), benzene, 4-ethyl-1,2-dimethyl- (4.60%), benzene, 1,2,3,4-tetramethyl- (3.93%), benzene, 2-ethyl-1,4-dimethyl- (3.88%), aniline, N-methyl- (3.68%) and naphthalene (3.08%) were ranked as moderately abundant. Literature survey showed that some of the identified compounds possess antifungal activities against various fungal species and could be responsible for antifungal activity of the flower extract against *M. phaseolina* and *S. rolfsii* in the present study. This study also concluded that *S. rolfsii* was more susceptible to the flower extract than *M. phaseolina*.

**Keywords:** Antifungal; *Cassia fistula*; Flower extract; GC-MS analysis

## **STEMS046: CONSERVATIONAL STUDIES FOR FOLIAGE INVERTEBRATES AMONG TERRESTRIAL AND AQUATIC ECOSYSTEM**

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Flora of an area plays a significant role in conserving richness and diversity of invertebrate's assemblages to provide basic survival needs to them by shifting a predator-dominated tropic structure to a herbivore dominated structure and likely impacting ecosystem function and services. Keep in view the conservational strategies. The present study was conducted. It has been concluded that the horticultural parks were the best reservoir for the occurrence and abundance of insect communities. From overall data, it has been concluded that maximum relative abundance from Bagh-e-Jinnah 25.21% ( $n \geq 30$ ) was recorded to taxa, *cadra cautella* (Pyralidae), followed by 10.92% ( $n \geq 13$ ) *Polistes aurifer* (Vespidae) 9.24% ( $n \geq 11$ ) for *Chrysoma rufifacies* (Calliphoridae). From canal park, 11.40% ( $n \geq 13$ ) was recorded for *cadra cautella* (Pyralidae), followed by 9.65% ( $n \geq 11$ ) for *polistes aurifer* (Vespidae) and 8.77 % ( $n \geq 10$ ) for *Coleocentrus caligatus* (Ichneumonidae). Minimum relative abundance was recorded from the canal site of taxa *Tengenaria domesticus* (Agelenidae), and from bagh-e-Jinnah site relative abundance *Sympetrum flaveolum* (Libellulidae) was recorded. From the results of entire research study, it is recommended that kindly be made keeping in view the conservation strategies for future concern.

## **STEMS047: THE PHYSIOLOGICAL AND HEMATOLOGICAL RESPONSE OF RABBITS TO DIETARY SUPPLEMENTATION**

## **WITH VITAMIN E, MORINGA OLEIFERA LEAVES AND CARROT**

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Rabbit meat has excellent nutritional and dietetic properties because it contains high protein content, enriched with poly unsaturated fatty acids (PUFA), vitamin B complex, and Low cholesterol level which meet the requirements for modern consumer healthy lifestyle. Rabbit farming preferred over poultry farming due to low risk of diseases and no special care. The aim of this study is to evaluate the effect of dietary supplementation with Vitamin E, Moringa oleifera leaves (MOL), Carrot on rabbit growth reproduction, Survival rate of kits, Hematological indices and lipid profile of rabbits. A total of 60 rabbits were randomly divided into four groups each contain 10 does and 5 bucks and their dietary supplementation continued for 80 days. Animals were feed two times a day with alfalfa hay. Group A treatment (T1) with normal diet (Alfalfa) + 50mg Vitamin E/kg BW of animal every day orally. Group B treatment(T2) is with 2.5gms/kg BW of animal with Moringa oleifera leaves with normal diet, Group C treatment(T3) is with carrot 100gms/kg BW of animal with normal diet and Group D is not treated(T4) with any dietary supplement and kept as control. Body weight and temperature were recorded on daily basis. Blood samples were collected from jugular vein at every 20-day interval and carried to laboratory for analysis. The result of the experiment showed that the survival rate of kits in T1 is higher than the other groups T2, T3 and T4. Group feed with T2 has improved total RBC, PCV, TLC, Hb and lipid profile higher than T1, T3 and T4 respectively. Overall BW increased in group treated with T2 is higher as compare to group T1, T3 and T4 respectively.

**Keywords:** Rabbit reproduction, Supplementation, Hematology, lipid profile of rabbit

**STEMS048: SYNERGISTIC ROLE OF VITAMIN E AND SELENIUM IN IMPROVING GROWTH AND REPRODUCTIVE PERFORMANCE BY ENHANCING HEMATOLOGICAL AND BIOCHEMICAL INDICES IN ANGORA RABBITS**

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Rabbit meat is economical and valuable source due to its excellent nutritive and dietary qualities, lean meat with low proportion of fat content, less saturated fatty acids and high level of proteins, amino acids and linolenic acid. However, the rabbit farming is currently experiencing low growth and reproductive rate. Vitamin E and selenium play an important role in growth and reproductive performance of animals. Hence the objective of this experiment is to investigate the effect of vitamin E and selenium on growth and reproductive performance of rabbits. To conduct this experiment, 24 rabbits with almost same body weight and parity were randomly divided into two equal groups (each group with 8 does and 4 bucks). Both the groups were offered basal diet and water ad-libitum throughout the length of experiment of 90 days. The supplemented group was injected with vitamin E (30 mg/kg BW) and selenium (0.25 mg/kg BW) at every 15<sup>th</sup> day subcutaneously, while the other group is kept as control and administered normal saline (0.9% sodium chloride). The blood sampling was performed at the same day and transferred to laboratory for hematological and biochemical analysis including, packed cell volume (PCV), red blood cell (RBC), hemoglobin (Hb), platelets count, total leukocyte count (TLC), alkaline phosphatase

(AST), bilirubin, and aspartate aminotransferase (AST). Growth performance and reproductive efficiency was also recorded. Results showed that the PCV, RBC, Hb, TLC and AST was significantly increased in supplemented group as compared to control group ( $P<0.01$ ). Moreover, supplementation significantly enhanced the daily weight gain and total body weight ( $P<0.01$ ). The supplemented group has significant high litter size, more survival rate of kits and high birth weight ( $P<0.01$ ). The overall results conclude that supplementation with vitamin E and selenium improved the growth as well as reproductive performance of rabbits by enhancing the hematological and biochemical parameters and could be used for effective rabbit breeding system.

**Keywords:** Rabbit, Vitamin E and selenium, Growth, and reproductive performance

#### **STEMS049: DETERMINATION OF PLANKTONIC DIVERSITY IN THE PONDS OF FISH HATCHERY**

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Plankton are lethargically moving and drifting small plant and animal life in water bodies. They are a rich food source for many other lives present in the water bodies. Ponds, usually, are little, superficial and incarcerated area of stagnant water. They are important habitat for many organisms and supply water for agricultural, industrial and domestic uses. While the fish hatchery is the place where artificial breeding is induced and eggs are brought up through the juvenile stage by keeping in confinement. The present research entitled Determination of planktonic diversity in the ponds of fish hatchery was performed at

Fisheries Research Farm, Department of Zoology, Wildlife and Fisheries, University of Agriculture, Faisalabad. The study was started with the collection of samples of water from ponds of fish hatchery. Planktonic net was used for the collection of plankton from the water samples and preserved plankton were observed under the light microscope. Different species of plankton were observed and identified. Species of zooplankton observed in the samples are *Brachionus plicatilis*, *Paramecium* characteristics, *Mesocyclops aspericornis* and *Keratella valga* etc. The species of phytoplankton are *Volvox aureus*, *Pediastrum duplex*, *Chlamydomonas reinherdtii* and *Closterium setaceum*. The plankton are richer source of energy and food for higher organisms present in fish hatchery ponds and enhance the of fish production also.

**Keywords:** Plankton, fish hatcheries, water samples, diversity

### **STEMS050: SUSCEPTIBILITY OF SHOE FLOWER AND ROSE FLOWER REGARDING VARIOUS INSECT ORDERS**

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Flowers have ability to the invading insects which can reduce flower growth and quality. In general, these insects do not kill the plant, but may stunt and damage parts, affects flowering, cause aesthetic damage. They induce large numbers of problems for hibiscus plants, commonly in newly developing tissues. Keeping in view these constraints, the present study was conducted the record of susceptibility of shoe and rose plants regarding various insects order. From results of present study, it has been concluded that the both field of rose flower and shoe flower were best reservoir for the occurrence and abundance of order

Diptera and Hemiptera representing 10 families, 14 genera and 19 species. From the overall data maximum relative population was recorded pertaining to order Hemiptera and Diptera. Maximum relative abundance was recorded to taxa, (Hemiptera: Aphididae) 17.42 % ( $n \geq 25$ ), followed by *Apis glycines* (Aphididae) 11.03 % ( $n \geq 16$ ), *Pyrrhocoris apterus* (Pyrrhocoridae) 9.66 % ( $n \geq 14$ ), *Maconellicoccus hirtus* (Pseudococcidae) 8.97% ( $n \geq 13$ ). From the results of entire research study, it is recommended that being best reservoir of insect community, environment and mankind friendly insect fauna is inhibiting these field; so the agronomic and horticultural practices may kindly be made keeping in view the conservation strategies for future concern.

### **STEMS051: EFFECT OF LACTIC ACID SUPPLEMENTATION ON INTESTINAL DIGESTIVE ENZYMES AND WHOLE-BODY MICRO MINERAL CONTENTS OF ROHU (LABEO ROHITA)**

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Organic acids are used as efficient additives for enhancing the digestive enzymes activity of intestine and whole-body micro minerals in a-gastric fish. This study was planned to analyze the effect of lactic acid supplementation on intestinal digestive enzymes and whole-body micro mineral contents of rohu (*Labeo rohita*). Five experimental diets containing graded levels of lactic acid (0, 1, 2, 3 and 4%) were formulated. For each experimental diet, two replicates were owed, and eighteen fish were stocked in each tank. The experiment was lasted for 8 weeks. Results showed that muscle proximate composition (i.e., crude protein, dry matter, crude fat and crude ash) was increased

significantly with increasing dietary lactic acid, up to a level of 2% and decreased with further increase in lactic acid level. Non-significant effect was observed on antioxidant enzyme activities (GPX and CAT) while, activity of SOD was decreased up to D4 contain 3% lactic acid supplementation. Intestinal digestive enzyme (protease, lipase and amylase) activities were significantly increased with increasing lactic acid supplementation level up to 2% and were decreased with further increase in lactic acid level. Increase in micro-mineral (Cu, Zn and Mn) contents was observed with increasing dietary lactic acid. Conclusively, supplementation of lactic acid improved muscle proximates, activity of intestinal digestive enzymes and whole-body micro mineral contents of *Labeo rohita*.

**Keywords:** *Labeo rohita*, Intestinal Digestive Enzymes, Whole Body Micro Minerals, Lactic Acid.

**STEMS052: EFFECT OF 0.5% AND 1.5% DIETARY SUPPLEMENTATION OF CINNAMON ON GROWTH PERFORMANCE AND BLOOD PARAMETERS OF NILE TILAPIA (*OREOCHROMIS NILOTICUS*)**

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Cinnamon was incorporated into the fish diet as a food additive for growth enhancement and nutritional value. The present study assessed the effect of 0.5% and 1.5% dietary supplementation of cinnamon on growth performance and blood parameters of Nile tilapia (*Oreochromis niloticus*) for two months. Fish were stocked in three glass aquaria with two replicates; Control (T<sub>0</sub>) and other experimental units. i.e. (T<sub>1</sub>) with 0.5% and (T<sub>2</sub>) with 1.5% cinnamon supplemented feed. It was

observed that the maximum weight gain achieved by cinnamon T1 was 2.8g, greater than T2 which was 2.1g, and control T0 showed the lowest weight gain of 1.8g. The average length gains in T0, T1, and T2 were 10.6, 32, and 16.6cm respectively. The value of RBCs for treatments T0, T1 and T2 were 1.24, 1.38, and 1.25 respectively. In T0, T1 and T2 values of WBCs were 11.3, 15.49, and 12.2. Hemoglobin values were 4.23, 5.68, and 4.10 in T0, T1, and T2. He observed in three treatments was 30.17, 35.52, and 31.2 respectively. MCV values in T0 were 18.59 for T1 230.26 and T2 it was 200.12, while for MCH were 35.37 for T0, 37.17 for T1 and T2 was 35.01. MCHC observed for T0, T1 and T2 were 17.27, 19.50, and 16.21. The range of Temperature, pH, DO, Total Alkalinity, and Total Hardness for three treatments was 30 to 25°C, 7.5 to 8.44, 4.52 to 4.99 mg/L, 330 to 345mEq/L and 4.5 to 4.89 ppm respectively. The result of this study proposed that cinnamon 0.5% was effective to increase growth and blood parameters of *Oreochromis niloticus* as compared to control and 1.5% cinnamon.

### **STEMS053: COMPARISON OF GROWTH KINETICS AND MESODERMAL DIFFERENTIATION POTENTIAL IN BOVINE MESENCHYMAL STEM CELLS DERIVED FROM AMNIOTIC FLUID AND WHARTON'S JELLY**

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Mesenchymal stem cells (MSCs) are extremely valuable in veterinary and human medicine due to their potential application in regenerative medicine. The purpose of this study was to isolate, differentiate and characterize bovine MSCs (bMSCs) from fetal adnexa including amniotic fluid (AF) and Wharton's jelly (WJ) of Nili-Ravi buffalo during the second trimester. After slaughtering of the animals, pregnant uteri (n=3) were retrieved and properly disinfected before bMSC isolation. The cells from AF were isolated by centrifugation at 400g for 10 minutes, while from WJ by enzymatic digestion with trypsin-EDTA (0.05%). The isolated cells were studied for their plastic adherence, phenotype identification, metabolic activity, and in vitro differentiation ability. The isolated bMSCs were fibroblast-like cells in their phenotype, adhered to plastic, showed similar metabolic potential and population doubling time (PDT), but proliferative activity was initially higher ( $P < 0.05$ ) in WJ-bMSCs. When appropriately induced, both cell types showed mesodermal differentiation into adipogenic and osteogenic lineage which was further affirmed by immunolocalization of fatty acid-binding protein 4 (FABP4) and osteopontin, respectively. However, image analysis revealed that the osteogenic activity of WJ-bMSCs was significantly higher ( $P < 0.05$ ) than that of AF-bMSCs. MSC surface markers (CD73 and CD90) were also positively expressed by both cell types. The study shows that fetal adnexa of buffalo is a rich source of MSCs for culture and robust differentiation capabilities.

**Keywords:** Mesenchymal stem cells, Nili-Ravi buffalo, amniotic fluid, Wharton's jelly

#### **STEMS054: INCIDENCE OF IMPORTANT VIRAL, BACTERIAL AND PARASITIC INFECTIONS IN BULKHI BREED OF SHEEP**

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Sheep population in Pakistan is 24.4 million which is 11th largest sheep population in the world. Out of total 28 sheep breeds present in Pakistan, fourteen are thin-tailed and other fourteen are fat-tailed. Bulkhi is a fat-tailed sheep breed native to Khyber-Pakhtunkhwa province of Pakistan and neighboring areas of Afghanistan. Present study aimed at determining the incidence of some important viral and bacterial infections in a phenotypically pure herd of Bulkhi sheep in District Attock, Punjab, Pakistan. Bulkhi sheep raised at a private farm (n=185) were screened for some important viral, bacterial and parasitic infections. Blood samples were obtained through aseptic jugular vein puncture to perform ELISA for diagnosis of bacterial infections (Brucellosis and Johne's disease) and viral infection (sheep pox). Fecal egg count was performed for the presence of internal parasites (nematode infestation). Incidence of Johne's disease was 1.89%, while nematode eggs were found in 17.7% of total the total samples. None of the specimen of Bulkhi sheep was found positive for Brucellosis or sheep pox. No clinical signs were observed in the sheep under investigation. These preliminary results suggest the better health status and resistance of Bulkhi sheep against bacterial and viral infections as well as good preventive measures at farm level. We recommend the potential of export of meat and food products of Bulkhi sheep. Detailed studies on a larger population are required for a more realistic status of viral, bacterial and parasitic infections in this neglected sheep breed.

**Keywords:** Bulkhi; Brucellosis; Sheep Pox; Johne's Disease; Nematodes

## **STEMS055: IMPACT OF CURCUMA LONGA BASED BIMETALLIC NANOPARTICLES AGAINST CHARCOAL ROT OF MAIZE**

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Maize lines third largest and edible crop after wheat and rice, and widely cultivated all over the world. Unfortunately, in Pakistan maize yield is very low as compared to worldwide production. There are many biotic and abiotic factors which hampered the maize production. One of the destructive biotic factors is charcoal rot disease (*Macrophomina phaseolina*) (Tussi) Goid. In the current research work impact of selenium-zinc oxide doped nanoparticles (Se-ZnO-NPs) was studied on the growth of maize plant grown under the stress of charcoal rot disease after 45 days of germination. Different growth parameters such as shoot and root length and biomass were studied after 45 days of germination. Moreover, various physiological attributes such as total chlorophyll content (THC) and reducing sugar (SUG) were studied while biochemical traits i-e total protein content (TPC) catalase (CAT) and polyphenol oxidase (PPO) were studied after 45 days of germination. selenium-zinc oxide doped nanoparticles (Se-ZnO-NPs) were synthesized by using the extract of rhizobium of *Curcuma longa*. Furthermore the successfully prepared Se-ZnO-NPs were characterized for various in vitro parameters including FTIR, ICP-MS, particles size, PDI and zetapotential. The ICP-MS reveled 54.43 mg L<sup>-1</sup> and 71.70 mg L<sup>-1</sup> Se and Zn ions respectively. SEM analysis revealed the size of prepared Se-ZnO-NPs 37 nm with polyhedral morphology. The EDX spectra also confirmed the presence of Se and Zn in Se-ZnO-NPs. The results revealed that soil amended with various concentrations (2, 4, 6, 8 and 10%) of NPs significantly ( $p < 0.05$ ) enhanced the growth of maize plant as compared to respective positive control. The antifungal activity of the prepared Se-ZnO-NPs against *M. phaseolina* exhibited significant ( $p < 0.05$ ) reduction in growth. Thus, the results

suggested that green synthesized Se-ZnO-NPs could be used to combat charcoal rot pathogen. However, further field experiments are required to study the activity of doped NPs in soil against pathogens.

**Keywords:** Bimetallic nanoparticles, green synthesis, charcoal rot disease, management

### **STEMS056: CONSERVATIONAL STUDIES FOR FOLIAGE INVERTEBRATES AMONG TERRESTRIAL AND AQUATIC ECOSYSTEM**

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Flora of an area plays a significant role in conserving richness and diversity of invertebrate's assemblages to provide basic survival needs to them by shifting a predator-dominated tropic structure to a herbivore dominated structure and likely impacting ecosystem function and services. Keep in view the conservational strategies. The present study was conducted. It has been concluded that the horticultural parks were the best reservoir for the occurrence and abundance of insect communities. From overall data, it has been concluded that maximum relative abundance from Bagh-e-Jinnah 25.21% ( $n \geq 30$ ) was recorded to taxa, *Cadra cautella* (Pyrilidae), followed by 10.92% ( $n \geq 13$ ) *Polistes aurifer* (Vespidae) 9.24% ( $n \geq 11$ ) for *Chrysoma rufifacies* (Calliphoridae). From canal park, 11.40% ( $n \geq 13$ ) was recorded for *Cadra cautella* (Pyrilidae), followed by 9.65% ( $n \geq 11$ ) for *Polistes aurifer* (Vespidae) and 8.77 % ( $n \geq 10$ ) for *Coleocentrus caligatus* (Ichneumonidae). Minimum relative abundance was recorded from the

canal site of taxa *Tengenaria domesticus* (Agelenidae), and from bagh-e-Jinnah site relative abundance *Sympetrum flaveolum* (Libellulidae) was recorded. From the results of entire research study, it is recommended that kindly be made keeping in view the conservation strategies for future concern.

**STEMS057: BEGOMOVIRUS (AGERATUM ENATION VIRUS) AND ASSOCIATED DNA-SATELLITES COMPLEX INFECTING IN WOODY PLANT (MORUS ALBA), FIRST TIME REPORTED FROM PAKISTAN**

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Begomoviruses are transmitted by vector whitefly in the family Geminiviridae which infect dicotyledonous host. These plant infecting viruses usually infect herbaceous plants, recent study investigating that these are also infecting woody plants. Foliage plant parts of mulberry were collected from Lahore-Pakistan which exhibiting leaf yellowing and curling symptoms. Old world begomovirus associated with DNA-satellites complex were amplified by using RCA product as PCR, cloned and sequenced. Two full length begomoviruses clones; *Ageratum enation virus* (AEV) associated with geminivirus associated alphasatellite in the genus *Colecusatellite*; *Ageratum enation alphasatellite*, sub-family *Geminialphasatellitinae* and *Papaya leaf curl betasatellite* have been first time reported from mulberry. *Ageratum*

enation virus and associated Ageratum enation alphasatellite were showing recombination, usually infect crops and weeds. Weed infecting monopartite begomovirus AEV and associated DNA-satellites complex is the first time reported in woody plant (*Morus alba*) and also first report from Pakistan.

**Keywords:** Old world, recombination, DNA-satellites, Colecusatellite, Geminalphasatellitinae.

### **STEMS058: IMPACT OF DROUGHT STRESS ON GROWTH INDICES IN SUNFLOWER GENOTYPES AT SEEDLING STAGE**

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Drought stress is the major abiotic factor in the whole world, and it is very difficult for the crops to grow under drought stress condition. On the other hand, insufficient rainfall or else deficiency of water for the determination of irrigation for the duration of the emerging or developing period that restrains its seeds vintage with substantial declines. The present-day learning is consequently, accompanied with the purposes to conclude the reaction of sunflower seeds as well as upbringing appearances to drought stress at propagation besides seedling phases underneath well-ordered state of affairs in addition to estimate the sprouting as well as plantlet development as transmission conditions for drought forbearance state of affairs in sunflower. For this experiment, we used CRD design that is control randomized design that can be used for lab experiments. There are two varieties of sunflower that we can be used in this experiment and three replications and having four treatments. This experiment was performed on two different varieties of sunflower that are taken from the Local market of

Bahawalpur and this experiment was conducted at University of Central Punjab, Bahawalpur. Pakistan is an agronomic country, however inappropriately it lacks the foremost products for national consumption that also consist of edible oil. The chief crops that are the basis of edible oil are cotton-seed as well as sunflower seeds and canola, also mustard. Sunflower has the capability to bond the gap in the middle of supply as well as claim for edible oil and acclimatize to the agro-ecological state of affairs in Pakistan.

### **STEMS059: CLIMATE CHANGE IN PAKISTAN; FUTURE CHANGES, IMPACTS & POLICY IMPLICATIONS**

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The enhanced vulnerability of Pakistan towards changing climate has been indicated by multiple lines of evidence while a substantial increase in the frequency and intensity of extreme weather events, ranging droughts, floods and heatwaves, with every approaching year authenticate the claim. The study forecasts that average temperature in the country is projected to increase by 2.6°C -5.1°C under different emission scenarios by the end of this century. The highest increase (5.5°C) increase in average temperature is predicted to take place in the north, the cities like Gupis, Drosh, Chitral and Gilgit by the end of the 21<sup>st</sup> century. The higher rate of warming and increasing climate extremes in the region is a leading cause of accelerated glacier melting which effect the livelihood of millions of people directly and indirectly. Moreover, higher melting rate can trigger the risk of GLOF events and floods in the downstream areas enhancing their susceptibility towards infrastructure and economic losses while in the longer run the

diminishing glaciers lead to permanent reduction of water flows in rivers. The climate models predict that the hottest cities by the end of the century would be from Sindh as Hyderabad shows highest average temperature in future followed by Jacobabad. In terms of precipitation, the driest conditions are likely to be prevalent in Dalbandin followed by Khanpur and Jacobabad. Also, as the southern region remains under the constant risk of heat waves every year, in particular, the urban regions like Karachi, will continue to face the challenge with more frequency and intensity in the future. The fertile areas of southern part of Punjab including Bahawalpur, Bahawalnagar and Multan also depict vulnerability to emerge as hotspots in terms of high temperature and low precipitation conditions in future. Apart from the North and South Pakistan, the Monsoon dominated areas of Punjab and Khyber Pakhtunkhwa (KP) also await dedicated policies to tackle with the projected shift in monsoon precipitation. The city of Murree, followed by Balakot and Muzaffarabad, will continue to be the wettest city of Pakistan by the end of century as well. Moreover, Paris Agreement warming thresholds (1.5°C and 2.0°C) are touched much earlier (2012 (2016) and 2025 (2030) under RCP8.5 (RCP4.5)) over Pakistan as compared to the global averages (2022 (2026) and 2036 (2047) under RCP8.5 (RCP4.5)) respectively. Keeping in view the future developments of China-Pakistan Economic Corridor (CPEC) and vulnerability of climate change need urgent policy actions and pertinent to update/implement the policies of climate, water, food and energy of the country with explicit recognition of the relevant risks, litigations and associated economic and social costs and implementation of well-defined mitigation and adaptation strategies.

**Keywords:** climate change, hotspot cities, paris agreement and climate policy

**STEMS060: SYNTHESIS, SPECTROSCOPIC, X-RAY DIFFRACTION AND MOLECULAR DOCKING STUDIES OF**

## **BIOLOGICALLY POTENT ORGANOTIN(IV) COMPLEXES WITH N-ACETYLATED B-AMINO ACIDS**

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N-acetylated  $\beta$ -amino acids (L1-L8) and organotin (IV) complexes (1-12) were synthesized and characterized by elemental analysis, FTIR, Multinuclear ( $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{119}\text{Sn}$ ) NMR, Mass spectroscopic and powder XRD studies. Based on spectroscopic investigation, the complexes (1, 3, 7, 9) have trans octahedral and (2, 8) have hexa coordinated geometry whereas the compounds (4, 5, 6) and (10, 11, 12) exhibited tetrahedral configuration in solution and trigonal bipyramidal configuration in solid phase. Powder XRD impressions for the ligand (L1) and its related organotin (IV) complexes (1-5) were attained to recognize their crystalline nature which appeared as face-centred cubic phases. In addition, molecular docking analysis of ligands on catalytic pocket of Sortase A (PDB ID 1T2W) showed the most potent binding affinity. The synthesized compounds have been passed through in vitro antibacterial screening against the bacterial species *Escherichia coli* and *Pseudomonas aeruginosa* (Gram-negative) *Staphylococcus aureus* and *Bacillus subtilis* (Gram-positive). The antioxidant studies were also performed by DPPH method. Results confirmed higher antibacterial and antioxidant activities values of the complexes than the respective free ligands. The complexes (1-6) exhibited excellent potential and portrayed themselves as powerful hypoglycemic agents when in vivo antidiabetic activities were carried out by Alloxan induced diabetic

rabbits. LD50 values of all the compounds displayed that the triorganotin (IV) complexes showed most significant results.

### **STEMS061: BI-LINAGE DIFFERENTIATION POTENTIAL OF SUBCUTANEOUS AND PERIRENAL FAT DERIVED CANINE MESENCHYMAL STEM CELLS**

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Differentiation ability of mesenchymal stem cells (MSCs) into mesodermal lineages makes them an attractive choice for regenerative medicine. Adipose tissue is an easy and accessible source for MSCs isolation having its pros and cons. The present study is aimed to compare the inguinal subcutaneous (SC) and perirenal (PR) adipose sources from canines for MSCs isolation, characterization, and differentiation. At passage 3, MSCs from both sources were evaluated for growth kinetics, determination of cellular markers, and differentiation into adipogenic and osteogenic lineages. Our results indicated a significant ( $p < 0.001$ ) increase in cellular growth kinetics at different time points, however, non-significant results were observed between cells derived from both tissues. Moreover, the MSCs from

both sources presented a positive expression of cell surface antigens, i.e. CD73, CD 90 and CD105. Further, MSCs from both sources successfully differentiated into adipogenic and osteogenic lineages. The differentiated adipocytes stained positive with Oil red O (ORO) stain for identification of intracytoplasmic fat droplets, however, qPCR analysis for expression of FAS indicated a non-significant difference between both sources. While differentiated osteocytes stained positive with alizarin red S (ARS) stain, showed extracellular mineral deposition. Non-significant results were obtained between SC and PR fat derived MSCs on the basis of alkaline phosphates activity (ALP), and qPCR for the expression of the Osteocalcin gene. In conclusion, our results suggests that MSCs from both sources exhibit non-significant differences between their growth kinetics and bi-lineage differentiation potential. However, inguinal SC tissue can be collected easily with minimal invasive surgery as compared to PR fat tissue. Nonetheless, both tissues can be used further in regenerative medicine.

**Keywords:** Mesenchymal Stem Cells, Adipogenesis, Osteogenesis

## **STEMS062: FEMINISM: EFFECT OF DROUGHT STRESS ON GROWTH AND CHLOROPHYLL CONTENTS OF MAIZE**

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Water is extremely essential for the developing stages of the plant crops, consequently the inaccessibility of the water such as drought conditions severely disturbs the different characters of the plants both morphologically as well as physiologically. Drought is one of the

biggest abiotic stress factors in the whole world and because of it the yields of the plant crops are tremendously decreased which ultimately affects the economy. Therefore, on the basis of this problem, we conduct a pot experiment, in order to evaluate the impacts of the drought on the growth, morphological and the physiological traits of the maize (*Zea mays* L.). Two varieties of the maize were used during the experiment which was sown in the normal as well as the water shortage conditions in the green house of the Botany Department, University of the Central Punjab, Bahawalpur, Pakistan. During this experiment, three treatments with different field capacities (100% Fc, 60% Fc and 40% FC) were applied by using the completely randomized design (CRD) with four replications. The data about different growth and physiological characters was measured analyzed using the Statistics 8.1 software.

### **STEMS063: SCREENING FOR ANTIMICROBIAL ACTIVITY OF BIOACTIVE COMPOUNDS FROM LACTIC ACID BACTERIA**

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Lactic acid bacteria (LAB) are used for improving shelf life, nutritional value and quality of the fermented food products. The aim of present study was to evaluate LAB isolates for antimicrobial potential. The screening of LAB isolates for antimicrobial compounds was performed through co-culture and disk diffusion assay against 10 indicator organisms. Among 12 isolates, only two inhibited the growth of *Staphylococcus aureus* which indicated that these LAB isolates have the ability to produce antimicrobial bioactive compound. The

extracellular compound produced by LABY-1 and LPA-6 was extracted by chloroform extraction. The acidified cell free culture supernatant (CFCS) of LABY-1 and LPA-6 exhibited low antimicrobial activity as compared to the chloroform extracted layers of CFCS. The diameter of inhibition zone against *S. aureus* ranged from 25-26 mm in extracted layers and 20 mm in acidified CFCS of LABY-1 whereas 24-28 mm in chloroform extracted CFCS layers and 25 mm in acidified CFCS of LPA-6. The precipitated CFCS of LABY-1 and LPA-6 produced larger inhibition zones with a diameter of 24 and 28 mm, respectively as compared to the acidified CFCS. The concentration of protein in CFCS and chloroform extracted three layers of LABY-1 and LPA-6 ranged from 0.75-1.8 mg/mL and 0.4-2.0 mg/mL, respectively. The maximum protein concentration was recorded in upper extracted layer of LAB isolates. Present study showed that our LAB isolates have potential to produce bioactive compounds that can suppress the growth of pathogenic bacteria. Since bioactive compounds synthesized by lactic acid bacteria are regarded as safe alternative to antibiotics, these can be used as antimicrobial agent and natural preservative in food industry.

**Keywords:** Lactic acid bacteria, antimicrobial activity, bioactive compounds, screening, solvent extraction

#### **STEMS064: DEVELOPMENT AND VALIDATION OF HPLC METHOD FOR THE DETERMINATION OF NITRATE AND ITS APPLICATION IN THE BIOLOGICAL FLUIDS OF PATIENTS**

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The purpose of the study was to determine Nitrate using HPLC technique in the different biological fluids like serum, cerebrospinal fluid (CSF) and ascetic fluid. An HPLC method for the quantitative determination of nitrate in serum, CSF and ascetic fluid was developed using the mobile phase of 1.0 mM Na<sub>2</sub>CO<sub>3</sub> : 1.0 mM NaHCO<sub>3</sub> (1:1, v/v, pH 5 with H<sub>3</sub>PO<sub>4</sub>) at a flow rate of 1.0 mL/min. Eluate was detected at 220 nm with the retention time of nitrate 2.55 min. The LOD and LOQ values of nitrate were 0.03 µg/mL and 0.098 µg/mL, respectively. Nitrate was eluted through SAX Hypersil column of 150 × 4.6 mm id, with 5 µm particle size. Run time was 10 min. The method was validated according to the FDA guidelines and was found linear in the range of 0.25 to 62.5 µg/mL and %CV was <3%, within limits of FDA guidelines. The developed method was successfully applied in the determination of nitrate in biological fluids like serum, CSF and ascetic fluids of 20 patients. Results are discussed in the work.

### **STEMS065: FUTURE PERSPECTIVES OF FLUORESCENCE SPECTROSCOPY IN AUTHENTICATION OF FOOD AND FOOD PRODUCTS**

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Due to globalization and industrial development, it has become important to identify and authenticate the food and food products. Previously, convectional and time-consuming analytical approaches are being used for this purpose. Therefore, there is need to develop rapid and non-invasive technologies that are not only serve the purpose but also environment friendly and require very less sample preparation as compared to other convectional technologies. There are different

spectroscopic approaches that are being used to develop such methodologies in which fluorescence spectroscopy can be an alternative due to its specificity and sensitivity. The main objective is to develop rapid and non-invasive methodology for authentication of food products. The spectra of the food sample give peaks at specific excitation and emission wavelengths due to the presence of different fluorophores like aromatic amino acid (tryptophan, tyrosine and phenylalanine), vitamins (tocopherol, vitamin A, folic acid) polyphenols, and chlorophyll. The spectral data obtained for various food and food products can be interpreted through various chemometrics tools like principal component analysis (PCA) and partial least square regression (PLSR). The developed model can not only be used for classification and compositional analysis, but also employed for detection of adulterants to determine the purity of the food and food products. Therefore, it can be concluded that fluorescence spectroscopy along with multivariate data analysis is an innovative tool and has potential to develop a sensor for rapid and nondestructive characterization and authentication of food and food products.

**STEMS066: ECOFRIENDLY MANAGEMENT OF PINK BOLLWORM, PECTINOPHORA GOSSYPIELLA IN COTTON WITH SEMIOCHEMICALS AS MATING DISRUPTORS**

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Transgenic cotton expressing Cry1Ac provided excellent control of bollworms since its introduction in Pakistan. Control failure of *P. gossypiella* by Bt cotton Bollguard-1® expressing Cry1Ac in Punjab (Pakistan) demanded alternate method of control. Semiochemicals like sex pheromones utilized as mating disruptors for pink bollworm to reduce its population. The trials were conducted on 4 ha block at two sites of Multan (Jalalpur Peerwala and MNS-UAM Farm) 2017-2020. Initially PB-ropes were installed at pin head square stage after this on 1st flower @ 300 ropes/ha. PB ropes in combination with insecticides, data of natural enemies and other insect pests were recorded from both sites. PB-ropes were very effective in reducing pink bollworm population for almost 90 days at JPP. However, pink bollworm, population further reduced with one insecticide application at the end of the season. Moth catches were highly suppressed in PB-rope + Triazophos (1.07, 0.92, 2.11) followed by PB-rope + Bifenthrin (1.82, 1.42, 3.29) and PB-rope singly treated plot (2.72, 2.11, 4.20) as compared to control (45.90, 42.92, 48.27) in 2017, 2018 and 2019 respectively. Results were further confirmed by recording bolls infestation found minimum in PB-rope + Triazophos (1.92%, 2.07%, 2.40%), PB-rope + Bifenthrin (2.81 %, 2.22%, 3.40%) and PB-rope singly treated plot (4.74%, 4.11%, 5.77%) as compared to control (20.44%, 19.18%, 22.07%) in 2017, 2018 and 2019 respectively. In 2020 PB-ropes were installed at two sites of Multan (JPP and MNS-UAM Farm) at different levels @ 250, 300 and 375 ropes/ha. There was a significant decline in Green boll damage, infestation in left over bolls and moth population for almost 90 days. Farmers in this region applied 3-4 insecticides against pink bollworm belong to synthetic pyrethroids and organophosphate group which results into outbreak of whitefly due to mortality of natural enemies in the season. Mating disruption technique promotes the population of natural enemies and save at least 2-3 insecticides applications. The study concluded that PB ropes proved as an effective management technique for pink bollworm management. Installation of PB ropes at the appearance of 1st flower with one

additional application of Triazophos, help to lower PBW population below action threshold. It also helps to promote natural enemies that ultimately keep the whitefly population under control. Considering the cost of PB ropes, it is recommended to apply PB ropes @ 250-300/ha for better management.

**Keywords:** Pink bollworm, PB-ropes, Triazophos, Whitefly, Pyrethroid

### **STEMS067: EVALUATION THE ROLE OF SILICON FOR BUILDING SALT TOLERANCE IN COTTON (GOSSYPIMUM HIRSUTUM)**

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The Growth of Cotton (*Gossypium hirsutum*) were observed at different salinities level with and without silicon both under lysimeter and field conditions. Lysimeter studies shows good plant growth under non-saline without silicon (Sodium Silicate) amended treatment, however, at low salinities, silicon amended plants showed higher no. of leaves and height of plants. Branches of plants decreases significantly with increase in salt levels. Plants shows higher biomass at all salinities levels amended with silicon. Higher salt level significantly reduces the biomass of stem and root even after addition of silicon. No significant improvement were observed in reproductive parts at all salt levels even after edition of silicon. Under field conditions, Plants shows varied response, High salt level i.e. 0.6% shows more no. of branches in minus silicon treatment, however no. of side branches were higher in plants amended with silicon. Reproductive pattern showed slightly better performance in plants amended with silicon. Soil salinity build up, both

field and lysimeter were observed in plants treated with silicon indicating that silicon has salt building capability. It also indicates that the soil columns needs to be flushed at intervals to avoid excessive salt accumulation.

**Keywords:** Salinity, *Gossypium hirsutum*, Silicon, Tolerance

**STEMS068: MANAGEMENT OF PARTHENIUM HYSTEROPHORUS (L) BY USING AQUEOUS EXTRACT OF ANAGALLIS ARVENSIS (L)**

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Present study was undertaken to investigate the allelopathic effects of aqueous extracts of *Anagallis arvensis* against the *Parthenium hysterophorus*. This investigation was carried out in vivo and in vitro. *Parthenium* is widely distributed, almost across the world and has become the most important invasive weed. *Anagallis arvensis* have demonstrated inhibitory activities on seed germination and seedling growth of parthenium. In vitro aqueous extract of leaves and inflorescence of *Anagallis arvensis* surpass the root and stem aqueous extract. Significant control was calculated in germination percentage (50%), fresh weight of seedling (-55% and -44%) and dry weight of seedling (-65% and -66%) by aqueous leaves and inflorescence extract of scarlet pimpernel. In vitro foliar bioassay aqueous concentration (15%) of *A. arvensis* surpasses the all treatments and reduce the fresh biomass -45% and dry biomass -42% in first week of spray and fresh biomass -75% and dry biomass -82% in second week of spray. In vivo significant reduction was calculated in fresh and dry biomass of root and shoot under the allelopathic stress of dried whole plant of *Anagallis*

arvensis on the of Parthenium. hysterophorus. (-10% to -39% ) Fresh biomass of root (-10% to -39%) and dried root biomass of Parthenium was reduced from (-20 to -40) respectively as compare to control, shoot fresh biomass of Parthenium reduced from (-25% and -26%) and dried biomass of shoot (-26% and -17%) respectively as compare to control.

### **STEMS069: SCREENING OF WHEAT GENOTYPES USING GROWTH AND PHYSIOLOGICAL ATTRIBUTES AT SEEDLING STAGE UNDER DROUGHT STRESS**

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Implications of shortage of water supply around the globe are becoming worse by every passing day due to the challenges of food production and calamities brought on by climatic changes due to global warming pose negative impacts globally on the grain production, specifically on cereal crops including wheat. Based on previous problem of drought stress an experiment was conducted in order to determine the selection criteria for drought-tolerant wheat genotypes at the seedling stage considering morphological and photosynthetic pigments. The 3 replication was used by applying Completely Randomized Design (CRD) to check the response of wheat under drought stress environment. Wheat was grown up to seedling stage and different attributes of morphology and leaf pigments were measured. The recorded data will be analyzed by using Statistix 8.1 Software. The drought stress significantly affected the morphology and leaf pigments of wheat.

## **STEMS070: RESPONSIBLE FACTORS AND ADVANCE APPROACHES TO TACKLE EMERGING GHOST OF ANTIBIOTIC RESISTANCE (ABR) BACTERIA**

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Antibiotics previously renowned as magic bullets have reduced their impact due to emergence of various strains of antibiotic resistance (ABR) bacteria. Some crucial factors that are blameworthy for ABR bacteria are lack of awareness in people regarding proper use of antibiotics that entail overuse, use of sub inhibitory concentration and unnecessary use of antibiotics. Futile government policies and improper implement of antibiotics by medical staff in animal and fish farming, industries, research labs and agriculture consequence in defilement of water, soil and food products. Discovery of novel antibiotics are rare as compared to emerging ABR bacteria. However, various useful strategies are now being applied like use of Beta lactamase inhibitors, efflux pump inhibitors, quorum sensing inhibitors, Radio switchers and siderophores as a target site, biofilm inhibition or disruption and use of nanoparticles to overcome this terror of ABR bacteria. Advance bacteriophage therapy and use of in silico tools in both in vito and in vivo trials have also helped in tackling emerging ghost of ABR bacteria. However, a lot of research is still required to overcome this issue of tirelessly emerging ABR strains. The purpose of this review is to illuminate responsible factors and advance tools that are being applied to resolve this issue of ABR bacteria.

Keywords: Antibiotic resistance (ABR), Antibiotics, concentration.

## **STEMS071: BACTERIOPHAGE THERAPY AS AN ANTIBIOTIC REPLACER AND ITS LIMITATIONS**

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Lavish use of antibiotics resulted in emergence of new strains of Antibiotic resistant bacteria (ABR), causing immense damage to human health. Bacteriophage therapy is found as an effective replacer of antibiotics. Bacteriophages (Bps) are smaller than bacteria and are cost effective, more selective in action and non-toxic to humans than antibiotics. However, both pros and cons still exist. Bacteriophage therapy shows both lytic and lysogenic cycle. Virulent phages are in abundance and have shown promising efficacy in in vitro trials where lysis usually occur within an hour. Results can be improved by using cocktails of bacteriophages than a single strain as infections involves weaves of bacteria. Recent studies also showed favorable results of phage-antibiotic synergism against bacterial infections. Bacteriophages have also revealed useful results in clinical trials on humans however, it is not comprehensive, as in vivo use of bacteriophage therapy has many limitations like lack of knowledge about pharmacokinetics, pharmacodynamics, lack of standardization and involvement of multiple bacterial strains in single infection. A lot of studies, research trials are still required for effective future use of bacteriophage therapy against humans' infections. The aim of this review paper is to enlighten the use of bacteriophage therapy as an antibiotic replacer and its limitations regarding in vivo trials.

**Keywords:** Antibiotic resistance (ABR), Bacteriophages (Bps), Antibiotics.

**STEMS072: ALLEVIATING STRESS OF SCLERTIUM ROLFSII ON GROWTH OF CHICKPEA VAR. BHAKKAR-2011 BY TRICHODERMA HARZIANUM AND T. VIRIDE**

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Chickpea (*Cicer arietinum* L.) is attacked by *Sclerotium rolfsii* at seedling stage and the resulting collar rot disease significantly reduces the survival percentage of the seedlings and ultimately yield of the crop. In order to reduce environmental pollution caused by the use of synthetic fungicides, this study was carried out to use two biocontrol agents namely *Trichoderma harzianum* and *T. viride* against *S. rolfsii*, and to investigate their effect on plant growth, yield and physiology of chickpea var. Bakhar-2011. *S. rolfsii* inoculation reduced dry weight of shoot, root and grains by 21.4%, 36.5% and 49%, respectively, over negative control. *T. harzianum* and *T. viride* increased shoot dry weight by 120% and 362%, root dry weight by 132% and 138%, and grain yield by 1109% and 572%, respectively, over positive control (*S. rolfsii* inoculated only). The effects of the pathogen and the two biocontrol agents were also studied on chlorophyll, carotenoid and phenolic contents as well as on activities of antioxidant enzymes viz. peroxidase (POX), polyphenol ammonia lyase (PAL) and catalase (CAT). *S. rolfsii* inoculation suppressed chlorophyll and carotenoid contents while both the *Trichoderma* spp. increased these parameters many folds. Phenolic content and activities of POX, PAL and CAT were generally increased due to *S. rolfsii* but became normal due to application of *Trichoderma* spp. This study concludes that *T. harzianum* and *T. viride* are the potential biocontrol agents for control of collar rot of chickpea var. Bakhar-2011.

**STEMS073: EFFECT OF VITAMIN E AS FEED ON GROWTH, BODY COMPOSITION AND ANTIOXIDANT ENZYMES PROFILE OF LABEO ROHITA AND CIRRHINUS MRIGALA**

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An experiment was conducted out for 60 days to study the effect of vitamin E increment in feed on growth, body composition, and antioxidant enzyme profile of *Labeo rohita* and *Cirrhinus mrigala*. Three glass aquaria were selected, each having 10 *Labeo rohita* and 10 *Cirrhinus mrigala*. These aquaria were designated as control, T1, and T2 treated with three diets supplemented with 0, 100 and 200 mg/kg vitamin E. Feed was given daily at 6% of body weight and uneaten feed faecal matter were removed by siphoning. Growth parameters (weight and length) of the fishes were recorded weekly. At the end of the experiment proximate body analysis such as moisture, crude proteins, crude fats, ash and carbohydrate of meat sample and parameters of antioxidant enzymes (catalase, super oxidase dismutase) were evaluated in liver and gills samples obtained by sacrificing the fish. The results showed that in T1 both fish species showed the highest growth, but *Cirrhinus mrigala* showed less growth in T2 than control. The average weight gain of *Labeo rohita* and *Cirrhinus mrigala* in both treatments (T1 and T2) were 9.02g, 8.34g, 8.07g and 6.87g, respectively. The result of the present research work revealed that vitamin E can also effects the proximate body composition of both fish species almost in similar manner. Crude proteins and ash contents increase with increasing level of vitamin E in liver followed by gills. Moreover, catalase and superoxidase dismutase showed more activity in *Labeo rohita*. To conclude, the statistical analysis i.e. two-way ANOVA and multiple range test (Tukey,s) showed that in T1 (100 mg/kg) and T2 (200 mg/kg) dietary vitamin E has a significant ( $p>0.05$ ) effect on growth, body composition and antioxidant enzymes profile of two fish species.

## **STEMS074: NATURAL RESOURCES OF CHOLISTAN DESERT AND THEIR CONSERVATION STRATEGIES**

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This desert is located in Bahawalpur, Bahawalnagar and Rahim Yar Khan Districts. Cholistan native name is 'ROHI'. The Cholistan was a cradle of civilization commonly known as the Hakra valley civilization. This was when the river Hakra flowed through the region. The basic components and processes of the biosphere are linked to each other and to the goods and services they provide to humans. Human lives depend on natural resource diversity in a number of ways. Natural resource diversity of Cholistan desert, which is a vast area basically, used as grazing ground. The region is endowed with variety of natural resources. Natural vegetation of Cholistan desert is mainly composed of xerophyte species. Cholistan desert is wealthy with all kind of wildlife, including magnificent mammals like rhinoceros, lions, leopards and a number of beautiful game birds. The local inhabitants are mainly pastoral nomads engaged primarily in livestock rearing activity. For this reason, we have outlined the natural resource diversity of Cholistan in this study and tried to address some possible conservational measures to save it. Thus, it may provide a base line to conduct extensive research on natural resources of the region and to draw lessons for future resource development planning and use.

**Keywords:** Natural Resources, Flora, Fauna, Cholistan.

## **STEMS075: SLOW METABOLISM AND HOW THIS RELATES TO BODY FAT**

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Metabolism or metabolic rate is defined as the series of chemical reactions in a living organism that create and break down energy necessary for life. Its part truth and part myth that metabolism is the key to weight. Several different factors affect metabolism, or how many calorie body burns each day. In case of fast metabolism, who are thin despite eating huge amounts of foods. They may also be individuals who eat a lot of calories, but they're healthy calories, more proteins, fats or carbohydrates. Keeping metabolism high is crucial for losing weight and keeping it off. However, there are some factors that slow down body's metabolism and cause weight gain. These factors includes living a sedentary lifestyle, consuming too less water, eating too few calories, having poor sleep, chronic stress, lack of exercise and drinking sugary beverages. Experts claim that human can improve immune response by raising our core temperature. It will influence one's metabolism if their body temperature fluctuates even to a degree less than the normal. As temperature demonstrates a higher metabolism, the growing core temperature will also help you lose weight.

**Keywords:** Metabolism, Temperature, Weight, Immune response

## **STEMS076: CHRONIC EFFECTS OF NICKEL AND ZINC ON THE HEMATOLOGICAL PARAMETERS OF GRASS CARP (CTENOPHARYNGODON IDELLA)**

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This study was established to investigate the chronic toxicity response in terms of chronic level concentrations of nickel, zinc on grass carp's hematological parameters. Fish fingerlings were obtained and acclimatized in controlled laboratory conditions. A commercial diet was given to the fish. To conduct the experiment, glass aquaria of 80-litre water capacity were used for three treated group with three replicates. In the first, second and third group, 1/3rd, 1/4th, 1/5th and 1/6th of the LC50 concentration were determined. Ni, Zn and Ni+Zn mixture were given to the fish fingerlings, respectively; for 15, 30, 45 and 60 days, the control fish was kept free from metal exposure. Blood samples were taken after every 15, 30, 45 and 60 days from all the treated groups to assess hematological parameters. The Hematological parameters such as RBCs, WBCs, Hb, Hct, MCV, MCH and MCHC were observed. The results showed a significant reduction in Hb, RBCs, and Hct in all the treated T1, T2, and T3 groups. The maximum decline in the mean values of Hb ( $5.50 \pm 0.12$  m/gL) and RBCs ( $1.82 \pm 0.031 \times 10^6$ /ul) were observed in T1 as compared to the control group mean values, whereas a significant reduction in the mean value of Hct ( $48.72 \pm 0.37\%$ ) was observed in T3. WBCs increased significantly, MCV, MCH and MCHC showed significant variations as compared to the control group. Correlation in Physico-chemical parameters showed significant fluctuations throughout the study period.

## **STEMS077: ECONOMICAL EVALUATION OF LAL SUHANRA NATIONAL PARK BAHAWALPUR**

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Lal Suhanra National Park was established as National Park in Pakistan during 1972. Total area of this National Park is 162568 acres out of which irrigated plantation is raised over 17769 acres, pond area on 4780 acres and desert having natural flora is on 140019 acres. This national park present multidimensional attractions to the people including recreation, study, research, park area, rest house, lake area, wildlife enclosures etc. For the development of the area with its main resources are reserved with proper management. The proper management is necessary to calculate or evaluate the economic structure of that area. The objective of this study was to know about the income and there main sources coming from the park in 2015-16. For this purpose evaluation was required for the complete data regarding with the budget, income, employers, maintenance, feeding of wildlife, development scheme budget, nursery, conservation and construction. Collected data revealed the economic structure of the area obtained from different resources. It was observed that income generated per year in Pakistani rupees from the boating was 370800, canteen 1501000, timber 43886679, firewood 2087625, from the mesquite (*Prosopis juliflora*) 6005644 and honey provides 722700 rupees per year. Budget allocated in Pakistani rupees for employers was 25947396, maintenance budget was 2856000 and for feeding of wildlife was calculated 7750000 rupees per year. This study provides a better plan for the development of the area and condition of residents

in the future. It also enhances the political, social and ecological behavior of the area. Meanwhile development rate of the parks and different schemes of conservation strategies will be initiated on the basis of this information. Wildlife conservation, safety and breed endangered species; which type of habitat is better for survival can also be focused.

**Keywords:** Resources, Maintenance, Conservation, Construction and allocation

### **STEMS078: EFFICACY OF NEEM (AZADIRACHTA INDICA) EXTRACTS ON BACTERIAL DISEASES OF CABBAGE & CAULIFLOWER**

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Bacterial diseases of Brassica species are economically very important and difficult to control. Even 0.03% infestation can infect whole field. Losses in terms of yield loss, quality damage and production loss are great when bacterial leaf blight and bacterial soft rot attacks. Not a single measure was found to control infection completely, until *Azadirachta indica* was found to have a great potential, not only in eradicating bacterial infection but also in restricting insect attack. *Xanthomonas campestris* pv. *campestris* causes bacterial leaf blight/black rot in crucifers especially in economically important leafy and fleshy vegetables. Brassica oleracea have two important subspecies; cabbage and cauliflower. Both are very susceptible to bacterial

diseases. Severe epidemics has caused great loss and still no resistant variety or control treatment found. *A. indica* is a better substitute to other chemical synthetics because it doesn't have residual effect and shows excellent responses to bacterial invasions. This work shows the extent of *A. indica* against bacterial diseases of brassica as a replacement of other chemicals, injurious to health. Different concentrations were used against *Xanthomonas campestris* pv. *campestris* and *Pseudomonas syringae* pv. *maculicola* in lab conditions evaluating their extent restricting bacterial growth. Lab evaluation was done with 5 concentrations (5, 25, 50, 75 and 100%) having 3 replicates each. 75% and 100% concentrations showed better results from others. 75% concentration was taken to the field for evaluating the potential of *A. indica* against *Xanthomonas campestris* pv. *campestris* and *Pseudomonas syringae* pv. *maculicola* in natural conditions. Results have shown about 70% successfulness by this treatment against diseases in the field. With the successful results in both conditions, lab and field, a fair recommendation is given to replace chemicals with better control treatment which is economical, natural, environmentally friendly and health conscious.

**Keywords:** *Azadirachta indica*, Bacterial Diseases, Cabbage, Cauliflower

### **STEMS079: EFFICIENT ADSORBENT DERIVED FROM HALOXYLON RECURVUM PLANT FOR THE ADSORPTION OF ACID BROWN DYE**

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The capacities, mechanisms and potential of low cost Haloxylon recurvum stems (HRS) biomass for the removal of acid brown354 dye from aqueous solution were investigated. Fourier transformed infrared spectroscopy (FTIR), scanning electron microscopy (SEM) and elemental analysis was used for characterization. The equilibrium sorption capacity of the biomass increased with increasing the initial dye concentration. The extent of dye removal decreased with increase in the temperature as well as the particle size of the biomass. Lagergran pseudo first order kinetic model as well as Langmuir and Temkin sorption isotherms were well in line with the sorption data and best represented the equilibrium sorption of the dye.  $\Delta G_o$  and  $\Delta H_o$  indicated the spontaneous, feasible and exothermic nature of the sorption process. The studies indicated that the HRS biomass was very attractive material for removing the anionic dye from dyed effluents than many of those reported in the literature.

**Keywords:** Haloxylon recurvum, Acid brown, Kinetics, Isotherm, Cleaner production.

### **STEMS080: QUANTIFICATION OF INSECT PESTS AND THEIR NATURAL ENEMIES OF SUNFLOWER CROP**

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Sunflower is the most essential oilseed cash crop in Pakistan. There are many biotic and abiotic factors involved that decreases the crop yield, within these factors, insect pests, poor agronomic practice, seed quality,

and changing environmental conditions are the major factors. Various chewing and sucking insect pests attack the crop. These are mostly managed by using chemicals such as pesticides, and by using biological control method. The basic purpose of study to find the relationship between insect pests and their natural enemies. Quantification of insect pests and their natural enemies study was done under Randomized Complete Block Design (RCBD). The insect pests' population and also natural enemies population was recorded from field and collected data was evaluated by using simple Microsoft Excel. In first week, March 29, 2019 population of aphids was very low (67.777 per 100 plants) as well as other insect pest population was also low but later in later weeks with increasing growth of plants, the population abundance increased gradually and exponentially. Among observed different insect pests, the population of aphid was highest (938.888 per 100 plants) on May 25, 2019. While population of whitefly was 910 per 100 plants on May 25, 2019. While dusky bug population was 77 per 100 plants on May 25, 2019. Maximum population of leaf hopper was 17 per 100 plants on June 8, 2019. While maximum population of armyworm and American bollworm was 7 and 5 per 100 plants on June 1, 2019. The population of insect pests e.g. aphid 60.07%, whiteflies 19.25%, dusky bug 6.201%, leaf hopper 3.531%, army worm 7.79% and American bollworm 3.146% were observed during cropping season. The population of natural enemies e.g. ants 21.61%, Coccinellids 26.09%, spiders 17.81%, Lacewing 12.068% and Syrphids 22.413% were recorded during the cropping season in sunflower crop.

**Key words:** insect pests, natural enemies, quantification, sunflower crop.

## **STEMS081: GROWTH PERFORMANCE AND HEMATOLOGY OF NILE TILAPIA AS INFLUENCED BY 15% REPLACEMENT OF FISH MEAL BY MORINGA SEED POWDER IN FEED**

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*Moringa oleifera* is quickly developing plant with extraordinary financial significances for the nourishment and medicinal industry. This study was designated to assess the sustainability of *Moringa oleifera* seed powder as an alternative source of protein for *Oreochromis niloticus*. Two iso-nitrogen diets formulated having 0% moringa and 100% fish meal (served as control) while other replace fish meal with 15% moringa seed powder. The fish stock at the density of 10 fish in each aquarium and treated with experimental diets in triplicate units at a rate of 6% body weight for a period of 4 weeks. The water quality parameters such as temperatures, pH, DO and growth parameters (weight, length, FCR and SGR) examined weekly. The water quality parameters for control T0 and T1 were temperature:  $22.16 \pm 1.03^{\circ}\text{C}$  and  $22.14 \pm 1.21^{\circ}\text{C}$ , pH:  $7.1 \pm 0.158$  and  $7.58 \pm 0.29$ , DO:  $3.56 \pm 0.144$  mg/L and  $3.48 \pm 0.13$  mg/L respectively. The growth parameters were recorded as the total weight gain for T0 and T1 was  $0.42 \pm 0.17\text{g}$  and  $1.10 \pm 0.48\text{g}$ , the total gain in length  $0.42 \pm 0.20$  and  $0.32 \pm 0.04\text{cm}$ , FCR:  $2.56 \pm 0.34$  and  $4.26 \pm 0.27$  and SGR:  $0.89 \pm 0.30$  and  $3.49 \pm 1.68$  respectively. The blood samples were collected at the end of trial to evaluate the influence of dietary supplementation on the hematological parameters: RBC was 0.91 and  $0.87 \times 10^6$  / $\mu\text{L}$ , hematocrit (Hct) 11.5 and 10.8% hemoglobin concentration (Hb) 6.6 and 6.0 g/dL and hematological indices (MCV 125.9 and 123 fl, MCH 72.5 and 69.6pg, MCHC 57.5 and 57.9 g/dL. The data for hematological and growth parameters and analyzed by using ANOVA, DMR and correlation matrix. The analysis of variance of RBCs, WBCs, Hb, Hct and MCV showed a non-significant difference between treatments, while MCHC

and MCH were significant respectively. The growth performance increased in weeks, highly significant relation exist between treatments and average length and weight.

## **STEMS082: TRADITIONAL USES OF MEDICINAL PLANTS AGAINST DIFFERENT ANIMAL DISEASES**

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Approximately 80% of the rural population in developing countries relies on traditional medicinal plants for their health care needs. As a result, people have developed their knowledge of these traditional medicines through their experiences and daily observations. In Bahawalpur area, this information is deeply rooted in their culture, transferred from one generation to the next orally and along gender lines. Structured interviews were conducted and a list of medicinal plants compiled. Data collection included local names of the plants, the plant parts used in the traditional medicine, methods of preparations, ingredients added, routes of utilization, the disease treated by the plant based remedies and the animals treated. Sixty one species of ethno veterinary medicinal plants belonging to fifty three genera and thirty one families were collected and identified for treating different livestock and human ailments. Leaves (42%) were most commonly used plant parts for ethno veterinary medicine preparations followed by fruits and seeds (12%) each. The traditional medicinal plant preparations were made by different methods including crushing,

grinding, boiling, cooking, taken as raw, juice and some others. These preparations were applied through different routes of administration like dermal, oral, nasal, ocular and optic routes. Oral route of administration (56%) was the most commonly used followed by dermal (37%). The study revealed that the traditional healers and some livestock owners have knowledge of medicinal plants used to treat different animal diseases. This study may guide the regulation of herbal medicine in Bahawalpur, Pakistan.

**Keywords:** Traditional medicinal, Survey, Herbs, Animal diseases

### **STEMS083: GLUTATHIONE MITIGATES COPPER STRESS IN SOLANUM MELONGENA SEEDLINGS: MODULATION OF ANTIOXIDANT ENZYMES**

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Glutathione (GSH;  $\gamma$ -glutamyl-cysteinyl-glycine) is an important metabolite that acts as a cofactor in different biochemical reactions, GSH involved in controlling the ROS concentrations in cell by protecting plants against oxidative stress induced by environmental stress. GSH pretreated seeds (50 mM, 100 mM, and 150 mM) will be grown in soil contaminated with 50 and 100mg kg<sup>-1</sup> copper. The experiment will be complete randomize design of nine treatments with 3 replicates of each in spiked and un-spiked soil. The aim of this study is to clarify the role of GSH in maintenance of photosynthesis in brinjal seedlings during copper stress. Copper stress reduced net photosynthetic rate, chlorophyll fluorescence, activities of antioxidant enzymes, increased MDA and H<sub>2</sub>O<sub>2</sub> level in seedlings. Exogenous GSH alleviated the stress-induced reduction of photosynthesis, the activity of antioxidant enzymes. Based on interpretation of the

chlorophyll fluorescence parameters, we concluded that exogenous GSH alleviated stress-related damage on the acceptor side of PSII. All these together contribute to activate physiological and biochemical processes involved in the mitigation of the salinity induced stress in capsicum plants. It also restored energy distribution. Furthermore, the GSH treated seedlings showed low bio concentration factor and translocation factor. The present study elucidates the potential of GSH in improving copper tolerance by modulating of antioxidant enzyme system.

#### **STEMS084: EXPRESSION OF ANTIOXIDANT GENES IN WHEAT (TRITICUM AESTIVUM) VARIETIES UNDER SALT STRESS**

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Two varieties wheat (*Triticum aestivum*) Johar (salt tolerant) and Sarsabz (salt sensitive) were examined under hydroponic conditions for their susceptibility to NaCl and antioxidant mechanism. Physiological parameters such as lengths of the root shoot, lipid peroxidation by malondialdehyde (MDA), H<sub>2</sub>O<sub>2</sub>, Proline contents were estimated. Antioxidant enzyme activities such as superoxide dismutase (SOD: EC 1.15.1.1), catalase (CAT: EC 1.11.1.6) and ascorbate peroxidase (APX: EC 1.11.1.11) were investigated and analyzed in 10-day old plant seedlings under 200mM NaCl stress conditions. Decrease Shoot-root length was detected in Sarsabz than Johar cultivar. In Sarsabz, lipid peroxidation was higher and substantial increases were observed in both shoot and root tissues. The concentration of proline showed a noticeable rise in salt dependency. Higher concentrations of proline in Johar cultivar may be the explanation of higher tolerance to salts compared to sarsabz. SOD was the one showing the highest increase in

activity in all antioxidant enzymes. Activity of APX showed similar changes in both cultivars. Significant increase was observed in shoot tissues as compared to root tissues. The results indicated that the shoots were more susceptible to stress from salt. The development of CAT enzyme in the shoot and root tissues of both cultivars showed substantial growth under growing salt stress conditions. Furthermore, NaCl stress has increased the expression of certain genes coding for antioxidant enzymes such as catalase, superoxide dismutase and peroxidase particularly in cultivar tolerant to the salt. In parallel, in response to the same stressful situation, their activities are increased in Johar. Maximum expression of all the antioxidant enzymes genes tested were observed in Johar (24 hours) and gradually decreased at 48 hours. Taken together, this data indicated that for durum wheat tolerance to NaCl, the ability to reduce oxidative damage is important.

**Keywords:** Antioxidant, Cultivar, CAT, SOD, APX.

### **STEMS085: TOXICOLOGICAL EFFECTS OF LEAD ON PEROXIDASE ACTIVITY IN CATLA CATLA**

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The contamination of freshwater systems with a wide range of pollutants has become a concern over the last few decades. Metals, especially heavy metals, are important contaminants of aquatic environments worldwide. Metals are well-known inducers of oxidative stress, and assessment of oxidative damage and antioxidant defense in fish can reflect metal contamination of the aquatic environment. Antioxidant enzymes can be used as a good biomarker of oxidative stress. Therefore, present study was conducted to evaluate the

toxicological effects of lead on peroxidase activity in liver, gills and kidney of fish *Catla catla* exposed to 96-hr LC50 concentration of lead for 4-day. Sampling was done after 24-hr interval. After each sampling fish were dissected and required organs viz. gills, liver and kidney were obtained to evaluate the peroxidase activity. Results showed that the peroxidase activity was increased in liver, gills and kidney of lead exposed fish as compared to control. It was also concluded that peroxidase activity increased as the exposure period increase. The Peroxidase activity in organs of fish followed the order: liver>gills>kidney.

#### **STEMS086: SYNERGISTIC EFFECTS OF SOME MACRONUTRIENTS ON GROWTH AND STRUCTURAL PARAMETERS OF OAT (*AVENA SATIVA* L.) UNDER SALINITY**

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*Avena sativa* L. is an important cereal crop used as food and fodder. The crop has gained significant interest for research due to its unique chemical nature and ability to grow in saline soils. Salinity is one of the most prevalent abiotic stresses affecting global agricultural production. To some extent *Avena sativa* is cultivated for the phytoremediation of moderately affected saline soils. However, high salt concentrations in the soil negatively affect oat plant growth and yield. Present study was conducted to evaluate the role of macronutrients (N and K) in synergy on morphology and anatomy of *Avena sativa* grown in saline soils. The experiment was executed in completely randomized design (CRD) with three replicates and two factors: salinity levels and macronutrients application. Plants were treated with five different levels of sodium chloride (0mM, 50mM, 100mM, 150mM and 200mM NaCl) and

macronutrients (200mg N, 2.5% K and 200mg N+2.5% K). Findings of the study showed significant decline in plant growth in terms of root length, shoot length, number of nodes, leaf area, and plant fresh and dry weight under high salt concentrations. Oat plants grown in moderate saline conditions showed stable growth at post-reproductive stage. Root anatomical studies showed increased cell area in the ground tissue in response to low salinity level. Maximum ground tissue thickness in stem was recorded in plants grown under highest salt concentration. Nitrogen and Potassium application resulted in significant increase in root and shoot length, nodes production, leaf area, plant fresh and dry weight, panicle length, and spikelet production in *Avena sativa* grown under saline conditions. Potassium application increased root epidermal, ground and conducting tissue thickness in oat plants grown under high salt concentrations. It is concluded that high salt concentrations at 150mM and 200mM NaCl reduce overall plant growth. Nitrogen and Potassium application in synergy mitigates the toxic effects of salt ions and help plants to grow under stress conditions by improving plant growth and structure.

**Keywords:** *Avena sativa*, Salinity, Phytoremediation, Nitrogen, Potassium, Morphology, Anatomy

### **STEMS087: CHRONIC EFFECTS OF NICKEL AND ZINC ON THE HEMATOLOGICAL PARAMETERS OF GRASS CARP (CTENOPHARYNGODON IDELLA)**

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This study was established to investigate the chronic toxicity response in terms of chronic level concentrations of nickel, zinc on grass carp's hematological parameters. Fish fingerlings were obtained and acclimatized in controlled laboratory conditions. A commercial diet

was given to the fish. To conduct the experiment, glass aquaria of 80-litre water capacity were used for three treated group with three replicates. In the first, second and third group, 1/3rd, 1/4th, 1/5th and 1/6th of the LC50 concentration were determined. Ni, Zn and Ni+Zn mixture were given to the fish fingerlings, respectively; for 15, 30, 45 and 60 days, the control fish was kept free from metal exposure. Blood samples were taken after every 15, 30, 45 and 60 days from all the treated groups to assess hematological parameters. The Hematological parameters such as RBCs, WBCs, Hb, Hct, MCV, MCH and MCHC were observed. The results showed a significant reduction in Hb, RBCs, and Hct in all the treated T1, T2, and T3 groups. The maximum decline in the mean values of Hb ( $5.50 \pm 0.12$  m/gL) and RBCs ( $1.82 \pm 0.031 \times 10^6$ /ul) were observed in T1 as compared to the control group mean values, whereas a significant reduction in the mean value of Hct ( $48.72 \pm 0.37\%$ ) was observed in T3. WBCs increased significantly, MCV, MCH and MCHC showed significant variations as compared to the control group. Correlation in Physico-chemical parameters showed significant fluctuations throughout the study period.

### **STEMS088: DIETARY STRATEGY TO IMPROVE EGG PRODUCTION AND EGG QUALITY BY SUPPLEMENTATION OF ORANGE SKIN, MARIGOLD AND GREEN TEA**

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Egg shell along its interior content are major attributes that attract consumers worldwide. Egg shell is a mineralized structure that protects the egg content from microbial invasion and broken. The preferred yolk

color is ranging from golden yellow to orange. Xanthophyll and carotenoid are the coloring pigments which are naturally occurring in marigold and orange skin that can influence the yolk color. The study was conducted to investigate the effects of marigold, orange skin, and green tea on egg external (egg weight, eggshell weight, and egg diameter and egg shell thickness), egg internal (yolk color, yolk weight, albumin weight) and on cholesterol level. A total of 40 hens with almost same age (34 weeks old) were randomly distributed into four treatment groups, ten hens and three roosters in each group. T1 fed with 4% orange skin, T2 with 4% marigold and T3 with 4% green tea and T4 is kept as control group. All the hens were provided with same basal diet with relevant supplement throughout the experimental period of 90 days. It was noticed that green tea and orange skin significantly reduced the cholesterol level as compared to marigold ( $p>0.05$ ). Egg shell was significantly ( $p>0.05$ ) thick in T3 group while non-significant ( $p<0.05$ ) thickness was observed in the eggs laid by T1 and T2 group. Egg yolk color score 12.00 with marigold and 5.00 score with orange skin while green tea has no significant effect on egg yolk color. So, Marigold shown efficient effect on egg yolk color as compare to orange skin and green tea.

**Keywords:** Egg, Marigold, orange skin, green tea, yolk color, Shell Thickness.

### **STEMS089: INCORPORATION OF ALOE VERA TO INCREASE THE NUTRITIONAL QUALITY AND SHELF LIFE OF CHICKEN NUGGETS**

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Aloe vera is a beneficial plant, used in medicines, cosmetics and foods for thousands of years due to its beneficial activities and powerful

antioxidant properties. Chicken nugget is the famous chicken product among people, especially liked by children. The consumer acceptance towards the meat products is reduced due to lipid oxidation process. The present work was intended to investigate the capability of Aloe vera as a natural antioxidant, antimicrobial and functional agent in a chicken meat product. The Aloe vera was added in the chicken nuggets at different levels i.e. 3, 6, and 9 percent, while product without Aloe vera served as control. Then, all these products were examined for physico-chemical parameters. Microbial growth and changes in lipid oxidation were also studied under frozen storage ( $-18 \pm 2^\circ\text{C}$ ). Results showed that protein, fat, and pH level of the nuggets decreased significantly ( $p < 0.05$ ) as the level of Aloe vera in chicken nuggets was enhanced. Moisture content and cooking yield enhanced significantly ( $p < 0.05$ ) with increasing the level of Aloe vera. While there was not any increasing or decreasing effect found in ash contents of chicken nuggets. Upon physico-chemical analysis and sensory evaluation, the treatment with 3% aloe vera was considered best. In storage studies, free fatty acid, peroxide values, and total viable count were observed lower in 3 % Aloe vera chicken nuggets as compared to control sample (0% Aloe vera). The study proved the potential of Aloe vera for its use in processed meat products to increase their shelf life.

**Keywords:** Processed meat; Aloe vera; Natural antioxidants; Lipid oxidation; Shelf life

### **STEMS090: HISTOPATHOLOGICAL INVESTIGATION OF MACROPHOMINA PHASEOLINA TASSI(GOID) INFECTION IN SESAME (SESAMUM INDICUM L.)**

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Dry and humid weather condition serves as favouring elements of Charcoal rot infection in sesame. Generally, the disease is identified by the symptoms appeared in adult plants which includes blackening of stem and root tissue disintegration because of presence of numerous microsclerotia. The population of viable sclerotia in the soil determines the severity of the infection. The present study investigated histopathology charcoal rot caused by *M. phaseolina* in sesame. Pot assay was arranged in Earthen pots filled with sterilize soil and fungal inoculum. Surface sterilized sesame seeds were sown and histopathology of infection was carried out on roots and stem pieces from both healthy and disease plant after 45 days. Histopathological studies of the infected root and stem showed that invasive hyphal structure grew through cortex region of plant tissue that results in tissue browning, disintegration and formation of large spaces in the cortex region. Large no of swelled and lightly melanized structure were also observed intercellularly which blocks the nutrients transport and caused wilting and death of plant helped in spread of fungal infection

**Keywords:** Histopathology , Sclerotia , Infection , Sesame , *Macrophomina phaseolina*

### **STEMS091: MOLECULAR IDENTIFICATION AND INCIDENCE OF STENOTROPHOMONAS MALTOPHILIA IN DAIRY ENVIRONMENT**

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*Stenotrophomonas maltophilia* is an emerging Multi-Drug Resistant (MDRs) opportunistic pathogen that causes nosocomial infections in human population with high mortality rate. It was the first time in Pakistan that *S. maltophilia* was isolated and characterized from milk and dairy environment. A total 36 samples were collected from the locality of Lahore including 16 samples of raw milk (cow, buffalo, camel and goat), 6 samples of pasteurized milk and 8 samples of empty dairy utensils and 6 from loosely available sweetened milk, then examined in laboratory. Results showed 4 isolated *S. maltophilia* were recovered from loosely available milk and empty utensils while not even a single strain of *S. maltophilia* was observed in pasteurized milk. Isolated *S. maltophilia* was further cultured and identified by various morphological tests, biochemical tests, DNA Extraction, PCR and Gel electrophoresis and then 16S rRNA gene sequence of *S. maltophilia* was analyzed with nucleotide BLAST search in GenBank. Phylogenetic relationship of *S. maltophilia* was analyzed with other closely related species present in GenBank. The results clarified that the incidence of *S. maltophilia* in dairy utensils was high then in raw milk environmental condition in milk processing units, improper cleaning of milking utensils and milk packaging unites. As raw milk contains zero biota so less prevalence of *S. maltophilia* was found. But it become increase after processing and because of its ability of biofilm production due to which it can easily adhere with the surface of utensils even after removing the milk from the bottled or utensils bacteria can be isolated through swabbing.

**Keywords:** *Stenotrophomonas maltophilia*, MDRs, Biofilms, Dairy Environment

## **STEMS092: A SOCIO-TECHNO HYBRID MODEL TO COMBAT DECAYING OF TWO-NATION THEORERTRICAL MODEL**

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This Article contributes and outlines a TOR to recommend formulation of an additional Education social Society to combat the overwhelming influence of the alien cultures and decaying of the indigenous culture. Scope of the proposed committee ensemble with a socio-Techno Model approach is to report results on proposed committee model to guide academic and social organisations on succinct themes and linguistics expressions to organize targeted and domain specific society aligned with specific objectives such as seminars, festivals and technocratic curriculum to pour and shower eternal peace by mother educational institute through spiritual, mystical preaching's as speeches or Naat Mubarak writing with fitted message of harmony and sanctity of two-nation theory and finally s competitions along with the objective to project the targeted message, so knowledge seeker may not astray and find an alternate entertainment besides mix dancing paradigms with inherent underline objectivity relating to Individual social responsibility as this come under the paradigm of social responsibility which is implemented with big organization to counter the social problems such as google etc has implemented on discrimination social problems at its organisation. A social-techno model where combined efforts from technology covering social aspects is also contributed as snippet on its evaluation strategy.

**Keywords:** Data mining, Term of Reference (TOR), learning outcomes, Social Change, All living style only my own choice - liberal women slogan

## **STEMS093: STUDIES ON THE GROWTH AND SURVIVAL OF TILAPIA FED WITH SALT INCORPORATED FEEDS**

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This study was performed to determine the growth and survival of tilapia with salt incorporated feeds. The trial was carried out for 120 days under different treatments. Four different diets were prepared with different levels of salt concentrations. Control T0, T1 containing (10% NaCl), T2 containing (12% NaCl), and T3 containing (16% NaCl). The fish with average body weight added, added into the ponds by the ratio of 20 fish in each pond. The fish were randomly distributed into the pond under different treatments. Data can be arranged by forming three replicates for each test diet. The growth parameters (weight gain, gain in length, FCR, SGR,) were measured on weekly basis. Bodyweight gain was maximum at 4% of body weight feed level. Fish growth in terms of body weight gain was significantly higher in T2 ( $54.99 \pm 1.77$ g) followed by T3 ( $45.87 \pm 1.76$ g), T1 ( $39.64 \pm 1.01$ g), T0 ( $37.66 \pm 2.21$ g). The gain in fork length and total length were also the same as the bodyweight gain shows. Fish shows highly significant values of SGR and FCR in T2 as compared to other treatments, while the effect of Physico-chemical parameters of pond water had a significant impact on the growth and survival of tilapia, the trial reading was recorded and keenly noted on weekly basis. The survival rate was recorded maximum in T2 with less mortality rate and highly significant for tilapia. So, it was accomplished that there was a significant upright role of 12% salt concentration on maximum growth promotion and survival in *O. niloticus*.

## **STEMS094: SYNCHRONIZATION OF INSECT PESTS AND THEIR NATURAL ENEMIES IN SESAME CROP**

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Sesame, *Sesamum indicum* L., is considered an essential nutritious food crop and has medicinal importance because of its ability to treat several diseases. Among the several factors that affect crop yield, insect pests play a significant role in crop productivity. During the recent years changing environmental conditions and use of synthetic pesticides had significantly affect the community of insect pests in sesame crop. In the current study synchronization of pests and natural enemies of sesame was studied under natural environmental conditions in sesame crop to determine the best time period for their synchronization. The study was conducted in the research area Youngwala, Department of Entomology, University of Agriculture, Faisalabad. The experimental area was divided into different blocks using RCBD layout and sampling was done in each block. Each sampling unit was considered as replication. Sampling for both pests and natural enemies was done regularly using fixed sampling method. The presence and number of pests and predators was recorded twice a week. The collected specimens were brought into the lab for identification. The collected data was subjected to descriptive tools using Microsoft-excel for analysis. The results exhibited that natural predators, coccinellid beetles, flies and spiders appeared on the crop when insect pest were already present. The number and presence of natural predator and insect pests were exhibited that there was no synchronization between them. Among all recorded insects, total population abundance of aphid was 739 specimens, followed by thrips 242, dusky cotton bugs 238, jassids 230, red pumpkin beetles 148, til

hawk moths 119 and spined legume bugs 64. Among natural enemies, total population of coccinellid beetle was 299, followed by flies 92 and spiders 64.

**Keywords:** insect pests, natural enemies, Sesame crop, Synchronization

**STEMS095: FUNGICIDAL POTENTIAL OF FLOWER EXTRACT OF CASSIA FISTULA AGAINST MACROPHOMINA PHASEOLINA AND SCLEROTIUM ROLFSII**

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Novelty statement: In this study, the effect of methanolic extract of Cassia fistula was studied on growth of two economically highly important fungal species namely *Macrophomina phaseolina* and *Sclerotium rolfsii*. Furthermore, GC-MS analysis of the extract was also done to find out possible antifungal compounds. There is not any report of such studies earlier especially from Cassia fistula plants growing in Pakistan. The present study was carried out to investigate the antifungal activity of methanolic extract of flower of Cassia fistula L. against two highly destructive soil-borne fungal plant pathogens namely *Macrophomina phaseolina* and *Sclerotium rolfsii*. Extract was prepared by soaking dried flowers of the test plant species in methanol for two weeks, filtration and evaporation on a rotary evaporator. Bioassays carried out with 1.562, 3.125, 6.25, 12.5, 25, and 50 mg mL<sup>-1</sup> concentrations of the extract exhibited 2–36% and 31–56% reduction in biomass of *M. phaseolina* and *S. rolfsii*, respectively. The extract was partitioned with n-hexane followed by chloroform and the later fraction

was analyzed by GC-MS that showed presence of 37 compounds. Hexacosane (16.06%) followed by heptacosane (10.94) and benzene, 1,2,3-trimethyl- (8.12%) were recognized as the principal components of chloroform fraction. Compounds namely heptadecane (7.15%), benzene, 4-ethyl-1,2-dimethyl- (4.60%), benzene, 1,2,3,4-tetramethyl- (3.93%), benzene, 2-ethyl-1,4-dimethyl- (3.88%), aniline, N-methyl- (3.68%) and naphthalene (3.08%) were ranked as moderately abundant. Literature survey showed that some of the identified compounds possess antifungal activities against various fungal species and could be responsible for antifungal activity of the flower extract against *M. phaseolina* and *S. rolfsii* in the present study. This study also concluded that *S. rolfsii* was more susceptible to the flower extract than *M. phaseolina*.

**Keywords:** Antifungal; Cassia fistula; Flower extract; GC-MS analysis

## **STEMS096: NUTRITIONAL SUPPORT AND KEY ASPECTS IN CORONAVIRUS 2019 DISEASE**

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The epidemic that broke out in Chinese Wuhan at the beginning of 2020 presented how much care is important for the rapid diagnosis of malnutrition and the immediate implementation of caloric and protein-balanced nutrition. According to specialists from the Chinese Medical Association for Parenteral and Enteral Nutrition (CSPEN), these activities are crucial for both the therapy success and reduction of mortality rates. Recommendations including principles for the diagnosis of nutritional status along with the guidelines for oral nutritional supplement, tube feeding, and parenteral nutrition. The

study summarizes Chinese observations for Clinical Nutrition and Metabolism guidelines. Nutritional approach should be an inseparable element of therapy in patients with COVID-19.

**Key words:** COVID-19; SARS-CoV-2; coronavirus; nutrition support; nutrition.

**STEMS097: EFFICACY OF SOME ATTRACTIVE TOXIC BAITs FOR THE CONTROL OF HOUSE FLY, MUSCA DOMESTICA (DIPTERA: MUSCIDAE)**

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House flies (Diptera: Muscidae) lives in close association with humans, are the potential vectors of a number of pathogenic diseases. The foraging success of house flies largely depends on the availability different phagostimulants like sugars and visual appearances of feeding materials. Among different target techniques, localized control using application of insecticide through baits, is effective as it not only mitigates the risks of resistance development in flies, but also diminishes the amount of toxicant released in the surroundings. The current free and no choice experiment was conducted in Insect Biodiversity and Biosystematics Laboratory, University of Agriculture, Faisalabad, Pakistan to check the visual attraction of house flies to different fabric colors. In both experiments, dark blue was the most preferred color followed by white fabric. However, among all the tested color fabrics, black and grey were least preferred by the adult house flies. In toxicity experiment, insecticide solutions were prepared in 20% sugar solution. Dark blue fabric strips were prepared by moistening with 20% sugar water solution containing median lethal concentrations of four different insecticides viz., fipronil, Imidacloprid, indoxacarb

and Spinosad. Maximum mortality was recorded in case of fipronil followed by imidacloprid. Since chances of resistance development in toxic baits is quite low, therefore could be utilized as potential candidates in developing chemical based management strategies for the control of house flies. However, field evaluation of these baits needs to be elucidated before inclusion in management programs.

**STEMS098: EFFICIENT ADSORBENT DERIVED FROM HALOXYLON RECURVUM PLANT FOR THE ADSORPTION OF ACID BROWN DYE**

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The capacities, mechanisms and potential of low cost Haloxylon recurvum stems (HRS) biomass for the removal of acid brown<sup>354</sup> dye from aqueous solution were investigated. Fourier transformed infrared spectroscopy (FTIR), scanning electron microscopy (SEM) and elemental analysis was used for characterization. The equilibrium sorption capacity of the biomass increased with increasing the initial dye concentration. The extent of dye removal decreased with increase in the temperature as well as the particle size of the biomass. Lagergran pseudo first order kinetic model as well as Langmuir and Temkin sorption isotherms were well in line with the sorption data and best represented the equilibrium sorption of the dye.  $\Delta G_o$  and  $\Delta H_o$  indicated the spontaneous, feasible and exothermic nature of the sorption process. The studies indicated that the HRS biomass was very attractive material for removing the anionic dye from dyed effluents than many of those reported in the literature.

**Keywords:** Haloxylon recurvum, Acid brown, Kinetics, Isotherm, Cleaner production.

## **STEMS099: INCORPORATION OF ALOE VERA TO INCREASE THE NUTRITIONAL QUALITY AND SHELF LIFE OF CHICKEN NUGGETS**

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Aloe vera is a beneficial plant, used in medicines, cosmetics and foods for thousands of years due to its beneficial activities and powerful antioxidant properties. Chicken nugget is the famous chicken product among people, especially liked by children. The consumer acceptance towards the meat products is reduced due to lipid oxidation process. The present work was intended to investigate the capability of Aloe vera as a natural antioxidant, antimicrobial and functional agent in a chicken meat product. The Aloe vera was added in the chicken nuggets at different levels i.e. 3, 6, and 9 percent, while product without Aloe vera served as control. Then, all these products were examined for physico-chemical parameters. Microbial growth and changes in lipid oxidation were also studied under frozen storage ( $-18 \pm 2^{\circ}\text{C}$ ). Results showed that protein, fat, and pH level of the nuggets decreased significantly ( $p < 0.05$ ) as the level of Aloe vera in chicken nuggets was enhanced. Moisture content and cooking yield enhanced significantly ( $p < 0.05$ ) with increasing the level of Aloe vera. While there was not any increasing or decreasing effect found in ash contents of chicken nuggets. Upon physico-chemical analysis and sensory evaluation, the treatment with 3% aloe vera was considered best. In storage studies, free fatty acid, peroxide values, and total viable count were observed lower in 3 % Aloe vera chicken nuggets as compared to control sample (0% Aloe vera). The study proved the potential of Aloe vera for its use in processed meat products to increase their shelf life.

**Keywords:** Processed meat; Aloe vera; Natural antioxidants; Lipid oxidation; Shelf life

### **STEMS100: RECENT ADVANCES IN RADIOTHERAPY FOR CANCER TREATMENT IN PAKISTAN**

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Occurrence of cancer is increasing worldwide with highest ratio in the developing countries including Pakistan. According to World Health Organization, each year approximately 173,937 cases in Pakistan are diagnosed with cancer. The number of cancer patients are increasing every year, on the other hand the facilities are not improving in the pace. In Pakistan still there is no National Cancer Registry. But some hospitals have developed their own Cancer Registry and they are sending their data on quarterly basis to PHRC (Pakistan Health Research Council). To provide the standard and advanced facilities of cancer treatment to patients is a big challenge especially in a low-income country like Pakistan where death rate due to cancer has reached to 117149. The purpose of this study is to state the existing radiotherapy services in Pakistan and to suggest future strategies to meet the challenges involving radiotherapy such as improving education and training, building cancer registries, organizing cancer awareness and screening programs as well as encouraging cancer research.

**Keywords:** Radiotherapy, cancer in Pakistan, cancer treatment, facilities in Pakistan

### **STEMS101: DEEP LEARNING APPLICATIONS IN MEDICAL IMAGING**

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This study deals with computer-aided processing of medical images. Recent developments in machine learning, especially in terms of profound education lead to the recognition, classification and quantification of trends in medical images. We present the basics of profound teaching and investigate their image registration, cellular and anatomical structure recognition, tissue segmentation, diagnostics and prognostics with computational assistance, and so on. We continue by addressing problems of study and recommending possible changes. It is entirely different in the healthcare industry from other sectors. It is a sector that is of high importance and people demand highest care and services at all costs. It has not met societal standards considering the tremendous budget intake. The medical specialist typically conducts the analyses of medical results. It also provides exciting solutions with good precision for health imaging, and is seen as an important tool for potential applications of health sector, following the success of profound learning in other real-world applications. In this section we addressed the state-of-the-art profound learning architecture and their optimization to segment and identify medical images. We addressed in the last section the complexities of profound approaches for medical imaging and open-ended research.

Key words: Deep learning, Neural network, Applications of deep learning in medical field, Challenges/ Issues

## **STEMS102: A Review Literature: Vision Based Navigation Methods of an Autonomous Drone in Real Time**

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While the rapid development of different algorithm in autonomous drone effect on navigation and detection of an obstacle. Path planning is a key feature that effect navigation of drone. An autonomous drone

has been working in many applications of real-time like agriculture, weather forecast, security, and wildlife monitoring, etc. The autonomous drone is working in a predefined path with limited speed and detection rate. How different algorithms work in drone navigation and detection. The main of this article is to present autonomous drone navigation in real-time. Path planning and object detection is two main part of this article.

**Keywords:** Autonomous drone, Object detection, Navigation, Path-Planning

### **STEMS103: SYNTHESIS OF MODIFIED CHITOSAN POLYMERS FOR EFFICIENT CONTROL ON RELEASE KINETICS OF IBUPROFEN**

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The efficiency of therapeutics was limited by many biological barriers of the gastrointestinal (GI) tract. Polymers have played an integral role in the advancement of drug delivery. Chitosan is one of the multifunctional natural polymers and also used in drug delivery system because of its biocompatibility and biodegradability. In this study, chitosan in presence of methyl acrylate, acrylic acid enhanced the drug loading and release efficiency of nanoparticles. Ibuprofen loaded chitosan nanopolymer shows a slow/controlled release of drug from polymeric matrix in buffer solutions. Release kinetics of drug was studied at different pH solutions (1.2, 7, 8 and 9.22). The results of drug release showed high release rate at pH 7 and 8. Within 16 hours, almost 50% of the drug was released from chitosan nanoparticles at pH 8 i.e.

pH of colon in GI Tract. Using SEM, FTIR, XRD and TGA, formation of the sample was confirmed. FTIR confirms presence of –NH<sub>2</sub>, OH-, C-H, C-O and C=O functional groups of chitosan nanopolymers. SEM identifies the porous nature of chitosan nanopolymer with partially rough surface. XRD confirms the amorphous nature of chitosan nanopolymer. TGA determines the thermal stability of chitosan nanopolymers up to 500C.

**Keywords:** Chitosan, methyl acrylate, acrylic acid, pH sensitive nanopolymer, Controlled drug delivery system.

#### **STEMS104: RUNOFF SENSITIVITY TO PRECIPITATION USING REGRESSION MODEL IN GARHI HABIBULLAH, PAKISTAN**

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A most important climate driver is precipitation, which is needed to integrate the sensitivity of precipitation on runoff on basin scale. The sensitivity of precipitation with runoff is determined for Garhi Habibullah, Pakistan. The most important gauging stations are Garhi Habibullah. This basin is divided into two zones. The time period is considered from 1991-2010 for climatic drivers. The sensitivity of precipitation with runoff was determined by elasticity framework. The period was divided into two decades i.e (1991-2000) and (2000-2010). For the first the initial period precipitation sensitivity was found lower as compare to second decade. The upper region mostly snows dominated region, sensitivity of precipitation of Garhi Habibullah is

higher as compare to other part of this basin. Due to warming climate, major contribution in runoff was due to melting of snow. The findings of this study will help to policy makers and water manger to provide the guideline for future.

**Keyword:** Pakistan, regression, Runoff sensitivity

### **STEMS105: IMPACT OF SOFTWARE ENGINEERING PRACTICES IN PAKISTAN**

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This article presents significance of Software Engineering practices in Pakistan. According to the Pakistani governmental statistics 60% of the population is of 15-29 age group which represents human and knowledge capital. Every year we have 20,000 graduates in the field of Engineering and IT. Software Engineering as a subject is not only used by Computer Science students but core for the Engineering students. Most of the students unable to secure a good job due to the gap between the graduate skills and industrial needs. In industry, skills are more important than knowledge. This article emphasizes the fact that practical performance in Software Engineering subjects fills the gap between graduate skills and industrial needs. We have used Cooperative Learning Method (CLM) on 3000 students over a period of one year. The results showed 56% satisfaction of graduates regarding competence who are new entrants into the industry. They even rate their skills learnt in universities very highly. Hence we conclude impact of Software Engineering practices in Pakistan is positive. In future, we will broaden our scope of study to learn its impact on Pakistan and International Economy.

**Keywords:** Software Engineering Course, Practical Significance, Competency Gap, Education

## **STEMS106: IMPLICATION OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION STUDIES IN PAKISTAN**

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The Purpose of this research is to investigate the implications of Artificial Intelligence in higher Education. Artificial intelligence is a field of study and the resulting innovations and developments that have culminated in computers, machines, and other artefacts having human-like intelligence characterized by cognitive abilities, learning, adaptability, and decision-making capabilities. The study ascertains that AI has extensively been adopted and used in education, particularly by education institutions, in different forms. This research has followed qualitative approach and data has been analyzed by reading various research papers, facts and figures. AI initially took the form of computer and computer related technologies, transitioning to web-based and online intelligent education systems, and ultimately with the use of embedded computer systems, together with other technologies, the use of humanoid robots and web-based chatbots to perform instructors' duties and functions independently or with instructors. Using these platforms, instructors have been able to perform different administrative functions, such as reviewing and grading students' assignments more effectively and efficiently and achieve higher quality in their teaching activities. Recent technological advancements and the increasing speed of adopting new technologies in higher education are explored in order to predict the future nature of higher education in a world where artificial intelligence is part of the fabric of our universities. According to the results of this study, it is suggested that Artificial intelligence should be promoted in our universities for the better results and development.

## **STEMS107: EFFECT OF POLITICAL SHOCKS ON WORKING CAPITAL MANAGEMENT OF FIRMS: EVIDENCE FROM PAKISTAN**

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Businesses encounter various uncertainties every day, including uncertainty about the demand of product, costs of the inputs and consequent profitability. The major triggers behind these uncertainties could be economic shocks (inflation, income level), economic policy shocks (change in tax rates, regulatory changes) or changes in consumer preferences. All of these reasons pose interesting problems for the researchers in business finance and management. However, a more tenacious reason of these uncertainties as identified by the recent researches, is political shocks, which influence the decisions of businesses directly or indirectly. Investment in working capital or/and in fixed assets is one of such pivotal decisions of the business that may be influenced by these uncertainties to a great deal. The aim of this research is to analyze the effect of political shocks on the working capital management of the firm, given the impact of independent factors such as firm size, capital expenditure, profitability and inflation. Firm specific data for this research were collected from the annual reports of firms listed at PSX of three different sectors (cement, automobile, automobile accessories) for eight years, from 2008 to 2015, whereas the economic data for the period were collected from the World Bank database. The data were analyzed using EGLS model and the findings suggest that there exists a significant negative association between working capital management and political shocks indicating

that under unstable political situations business prefer to tie lesser amount in their current assets encompassing investment in inventories and receivables.

**Keywords:** Political shocks, Uncertainty, Working Capital Management

### **STEMS108: AN ANALYSIS OF HRM PRACTICES AND OUTCOMES IN PAKISTAN**

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HRM practices are the source of improved productivity of both organizations and individuals, HR has emerged as one of the vital sources of gaining and sustaining the competitive edge over competitors. It is capable of developing employees and improving organizational productivity, and can also contribute significantly towards developing countries. In the background of developing countries, however, there is poor understanding and inadequate research on HRM. Nearly a decade ago, Pakistan also implemented HRM; however, experience is generating mixed results. The current research is being conducted with the aim of assessing Pakistan's HRM activities and HRM performance. Twenty HR staff employed in different organizations were collected from the study using semi-structured interviews and data. The key findings of the analysis are that, despite the implementation of different HRM practices, the general effect of HRM development is poor. Most of the organizations don't have a proper HR department to perform, Organizations don't give importance and do not realize the effectiveness of HR department. Due to poor implementation of HRM which is limited in scope, the full benefits of the functions are unattained. In order to take full benefit from HRM functions, organizations as well as the top management need to give greater importance to the HRM function. The findings

point to the limited sophistication of Pakistan's HRM function, which needs to be increased in scope to produce more favorable results.

## **STEMS109: DIGITAL IMAGE ENCRYPTION & DECRYPTION OVER A LARGER DISTANCE USING THE NETWORK OF NETWORKS**

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A message is received and interpreted as information. Communication can be forwarded from one person to another over a long distance, but it must be done in a safe manner, particularly if it is a private message. To encrypt messages and signals, computer scientists and engineers have traditionally used a variety of algorithmic techniques. To the group of society, cryptography is concerned with keeping messages confidential. Indeed, for most of cryptography's history, the security of secret communications has been a major focus. When sending a letter, it's often best to use an image, because cryptography can be performed with images in an emergency. One of the key forces behind the advancement of image processing and cryptography over the past decades has been the need to retrieve information from images and analyze their contents. In this article, a basic cryptographic approach was used to decrypt a message contained in an image, which was accomplished using widely used computational software tools.

**Keywords:** Encryption, ANN, Character Recognition, Image acquisition and Processing, Hill Cipher, MATLAB Tool.

## **STEMS110: GOOD GOVERNANCE AND PUBLIC VALUE DURING COVID-19**

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The outbreak of Covid-19 pandemic has changed the governance concept of world. Most of the business of public and private organizations have been shifted towards the online rather than physical interaction. This change of interaction has challenged the current governance practice. To provide the best services to citizen is the biggest challenge for the public administrators. They adopted different alternatives to implement good governance practices in organizations. Public value concept has emerged as best available solution to resolve the good governance issues by achieving the trust of citizens. The piece of research discuss the public value concept and its importance to implement good governance practices in public sector organizations of Pakistan. For the study data was collected through questionnaire from local government officers of Faisalabad district. Smart PLS was used to analyze the data and result revealed that good governance practices could be implemented by adopting public value concept in public sector organizations of Pakistan.

## **STEMS111: DIGITAL IMAGE ENCRYPTION BASED ON WATER WAVES CONCEPT USING CHAOS AND SHA-3**

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In this article, an advanced encryption technique is developed by getting the inspiration from the natural up-down water wave's phenomena that changes a reflection on pond's surface. The plain image is considered as water pond and stones are throwing on the pond to diffuse the pixels. The distance traveled by the waves depend upon the weight of the stone i.e. heavier is the stone, longer will be the distance. Each layer of pixels in image represents Up wave and Down wave around the hitting point of stone. The number of crest and troughs generated by a stone in radius are measured and are categorized into one to five levels (layers). The concept of Up wave and Down wave in encryption are achieved by addition and subtraction of pseudo-random numbers in the pixel's intensity. The pseudo random numbers are generated from chaotic map and transformed into stones of different weights ranges from 0-255. The effect of preceding layer is transferred to the next layer by exclusive-or operation. Before substitution, the pixels are shuffled in 1D vector using the index values of random numbers. The SHA-3 hash value is used for modification of initial seeds of the chaotic map. The initial seeds of the chaotic map are modified by the output of hash function. Finally, the simulated results are compiled which ascertains that the projected algorithm achieves the required security standard with large set of secret keys.

**Keywords:** Water waves, Chaotic Map, SHA-3, Gray Image Encryption.

## **STEMS112: STUDENT'S PERCEPTION AND PROBLEMS OF ONLINE CLASSES DURING COVID-19 PANDEMIC IN PAKISTAN**

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The purpose of the study was to examine the perception of students towards online classes. The study also identifies the problems of online classes faced by university students during Covid-19 pandemic in Pakistan. A cross-sectional study was conducted in Punjab, Pakistan. The responses were collected through online survey. A total of 820 students were approached through email and 734 were filled online survey. A well-designed questionnaire was developed, consists of perception and problems of online classes. The data was analyzed by using SPSS (Statistical Package for Social Sciences). The results found that more than half percent of students (53.68%) and (52.32%) were not satisfied with the commencement of online classes and its feedback mechanism, respectively. About, 65.39% had respond to negative effects of online classes on quality of education and 61.85% for research activities. Online exam was difficult for almost half percent of students. Mostly reported problems of online classes were internet issue (90.0%), problems in understanding online lectures (83.65%), online quiz/assignment cause more anxiety as compared to classroom quiz/assignment (78.0%), irritation while learning on device all the time (87.0%). It is concluded that university' students of Pakistan had negative perception and faced number of problems of online classes amid Covid-19 pandemic. The study suggested that emotional support is necessary for the wellbeing of students as study examining the Covid-19 outbreak has placed an extraordinary burden on students learning. Furthermore, assistance should be provided to students in dealings with online classes as well as for their capacity building.

**Keywords:** Covid-19, undergraduate students, online classes, perception, problems

## **STEMS113: DIAGNOSIS OF ALTERNATIVE CONCEPTIONS AMONG SECOND LANGUAGE LEARNERS: A CASE STUDY**

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Ideas those are developed without having any prior knowledge of the subject is not really false but can be said as alternative, original or pre concepts. The present study was conducted to diagnose alternative conceptions and to discover their best possible reasons in writing second language at secondary level. The present study was a case study. Diagnostic tests and interviews were used as research tools. The 300 second language students of 9<sup>th</sup> class were selected purposively as sample for test and 15 learners for semi structured interview. Data was analyzed qualitatively using thematic approach. Moreover, data triangulation was used to collect the results of test and interview. Poor listening, interference of mother language and traditional teaching methodology were major causes of these alternative conceptions. It was recommended that there would be suitable environment for learning a second language and constructivist-teaching strategies should be employed.

**Keywords;** English Language, Alternative conceptions, students understanding, Constructivist teaching and learning strategies

## **STEMS114: EFFECTS OF SOCIO DEMOGRAPHIC FACTORS OF FAMILIES IN EARLY CHILDHOOD EDUCATION IN PUNJAB**

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Socio demographic factors of families plays a vital role in the early childhood education. The objectives of the study were to observe the effects of socio demographic characteristics of families on the achievement of children. The population of study was all private schools of five towns of Lahore city. A sample of 40 student's parents were selected through stratified random sampling technique. The study used a qualitative research design, in which interview protocols technique was used to collect data and evaluation were done by using content analysis method. The results indicated positive effects of socio demographic factors of families on the achievements of the children. The socio-demographic features of the families like higher level of education, income and profession have significant effects on the family involvement and children's outcomes. Among the family members, mothers were more involved in educational activities of the young children. Multidimensional effects of socio demographic characteristics of families on children's accomplishments need further research.

**Keywords:** Achievement, early-childhood, education, homework, profession, socio-demographic

## **STEMS115: INFLUENCE OF NATIONAL CURRICULUM DOCUMENT BASED INNOVATIVE TEACHING APPROACHES ON IMPLEMENTING STEM EDUCATION: CASE OF PUBLIC SCHOOLS**

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Contemporary era is considered as age of science and technology. Scientific innovations are spreading rapidly through applications of contemporary education. Scientific, technological, engineering and mathematical education is enhanced by applying curriculum based pedagogical approaches during teaching learning process. National curriculum document, 2006 is a dynamic source that meets ever changing realities and provides equal opportunities for STEM learning. National curriculum document provides guidelines to implement STEM education to overcome deficiencies in scientific education through applying innovative teaching approaches; brainstorming, inquiry, problem solving and cooperative. Present quantitative leading to ex post facto research was conducted to explore the effect of national curriculum document based innovative teaching approaches on implementing STEM education in public schools on sample of randomly selected 800 respondents. Data were collected by administering self-constructed instruments, after ensuring content validity and Cronbach's Alpha reliability statistics .815. After ensuring ethical considerations from participants, final data were collected from public sector schools of District Lahore. Results of statistical analysis established that overall innovative teaching approaches have affected 50% on implementing STEM educations whereas brainstorming 35%, inquiry, problem 34%, problem solving 36 and cooperative teaching have affected 39% on implementing STEM education in public sector schools of district Lahore. On the basis of results, current research recommends that Government train public sector schools' teachers focusing innovative teaching approaches. Furthermore, District Education Authorities may bind their heads to follow national curriculum-based guidelines to implement STEM education.

**Keywords:** brainstorming, cooperative, inquiry, problem solving, STEM Education

## **STEMS116: TEACHERS' ATTITUDES TOWARD STEMS EDUCATION: PRIMARY LEVEL STUDY**

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Science, Technology, Engineering, Mathematics and Social Sciences (STEMS) is multi-disciplinary 21st century integrated approach of education. STEMS approach of education has gain attention to develop skills among students and prepare teachers to compete global economy. Teachers attitudes is important indicator for understanding and implementing STEMS. Present day societies are ensuring affective use of STEMS education since decades. Current study was conducted to explore primary school teacher's attitudes towards Science, Technology, Engineering, Mathematics and Social Sciences of public sector schools of district Lahore. Study was quantitative in nature and researchers used exploratory descriptive research design to examine phenomena. Data were collected through administering self-developed questionnaire from teachers in their institutions categorized in three sub-scales; mathematical understanding, understanding on science and concepts on technology mode of 5-point Likert type options. Sample of the study consisted of 600 teachers; 300 male and 300 female randomly selected from urban and rural public sector schools of Lahore. Initial questionnaire was pilot tested to ensure Cronbach's Alpha reliability score; .823. Researchers ensured ethical consideration prior to collect data from respondents. Collected data were entered in SPSS and researchers used descriptive statistics to explore current situation. Findings depict that male teachers have better attitudes towards STEMS education as compared to female teachers. Furthermore, male

teachers possess more mathematical, science and technological understandings as compared to female teachers. Study recommends that government provide funds and teachers' training regarding STEMS education for students' better educational gains to make better application of STEMS education.

**Keyword:** teachers' attitudes, STEMS education, understanding on science, concepts on technology

### **STEMS117: INQUIRY BASED SCIENCE EDUCATION FOR STEM EDUCATION**

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Science, Technology, Engineering and Mathematics (STEM) education plays a vital role in economic and social development through boosting human productivity, scientific and technological innovation. Today, all nations are competing to build smart and quality human resource. Hence, Pakistan can achieve its goal and vision of a 'knowledge economy' and boost industrial development by promoting quality STEM education in the country. Many of the advanced economies achieved tremendous economic growth through investments into STEM education. STEM education is key to drive innovation and as a result, create new ideas, improve processes and develop products. The major impediment to the STEM education in Pakistan has been linked with the ineffective approach of teaching STEM subjects in schools. However, Inquiry-based science education (IBSE) is an inspiring way of teaching STEM subjects by engaging students in designing and conducting their own scientific investigations. IBSE is an approach to teaching and learning in general but especially STEM subjects at all levels particularly at schools. IBSE approach comes from an understanding of how students learn, the nature of science inquiry, and

a focus on basic content to be learned. It also is based on the belief that it is important to ensure that students truly understand what they are learning, and not simply learn to repeat content and information. However, there are challenges of employing IBSE methodology as existing curriculum and teachers are not sufficiently trained to teach STEM subject using an IBSE methodology. Typically, an IBSE methodology encourages students through self-learning and participatory approach to formulate research questions, make designs and conduct investigations. To overcome these challenges, ECOSF has been promoting the IBSE approach and developing the capacity of science educators in the ECO region, including Pakistan. This research work will highlight the challenges, opportunities and lessons learnt through implementation of IBSE methodology undertaken by the Foundation.

### **STEMS118: GENDER BASED COMPARISON OF ATTITUDE TOWARDS TEACHING PROFESSION**

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For successful teaching profession, positive attitude of teachers is very important. Current study investigated the attitude of university students towards teaching profession. This comparison was on the basis of gender, university and subject wise. “Attitude Scale towards Teaching Profession questionnaire by Tezci and Terzi (2010)” was adapted for this purpose. 598 respondents participated in the study as a sample size from two universities.i.e. The Islamia University of Bahawalpur and Fatima Jinnah Women University. Convenient sampling technique was applied for sampling and data was collected by using Google form due to closure of educational institutions during Covid 19. Data were

analyzed by using independent T-test and one way ANOVA technique. Results of the study indicated that there was no significant difference of attitude in terms of gender and university. However, there was a significant difference on the basis of subject.

### **STEMS119: DIASPORIC COMMUNITIES CULTURAL TRANSFORMATION (EXPLORING SELF-IDENTITY) IN THE AFTERMATH OF COVID 19.**

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The present paper tends to shed light on the global cultural transformation in diaspora communities due to the endurance of Covid 19. As Corona virus has shattered the whole world economically, culturally and psychologically, people have lost their trust and faith in economic and social independence. The diaspora people who live on the threshold of society, enduring a life of segregation and oppression become even more confused. Their longing for lost homelands, cultural practices, rituals and everyday practices are marked by differences when living abroad. The sense of belonging is measured by proximity and social, psychological distances. The lost “cultural identities” are felt even more and again the question of belonging and self-identity is raised. The present study aims to delve deeper into the concept of marginalization and “othering”. The classical model of diaspora theory will be the tool to assess the level of migrants and their changing cultures along with shaping of identities. The focus remains largely on the notion of diasporic cultural transformation during covid 19, the importance of home and identity. In this paper we consider the broader issue at stake, the confused state of diaspora community, their social interaction in country of their origin compared to the countries they adapt for better life.

**Keywords:** Diaspora, culture, identity, covid 19, self, transformation, home

**STEMS120: ROLE OF COMPARATIVE MANAGERIAL TACTICS OF EDUCATION MANAGERS AND JOB FIDELITY IN STAFF**

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The research was the comparative managerial tactics of education managers in creating loyalty among staff of institute towards job. The study was survey type, descriptive and quantitative in nature. Education managers, staff and learners of secondary grade were population of study. Ten education managers selected purposively, 100 teaching staff members of institute and 1200 learners of secondary grade selected randomly as a sample with the equal ratio from urban and rural areas. The researcher personally visited and collected data from selected secondary schools. The questionnaire based on factors selected from previous researches and literature review was developed to achieve the objective. After pilot study of research the desired data were collected. The collected data were analyzed by relevant statistical formulas through SPSS-21 as; frequencies, percentage, standard deviation, mean score, t-test and correlation etc. The study found that majority of staff members of institute were highly provoked through democratic and achievement-oriented tactics style of education managers, while some were provoked through situational tactics style, whereas few were provoked under lassies-fair and authoritarian tactics style. The study explored that managerial tactics of education managers has significant

impact in creating fervor and loyalty among staff of institute toward duty. The education managers should adopt comparative managerial tactics and democratic techniques that cause to create fervor and loyalty among staff toward duty.

**Keywords:** Tactics, loyalty, democratic, provoked, fervor

## **STEMS121: REVIEW OF SINGLE NATIONAL CURRICULUM IN PERSPECTIVE OF THE EDUCATION OF CHILDREN WITH VISUAL IMPAIRMENT IN PUNJAB PAKISTAN**

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The single national curriculum (SNC) is one of the basic items of manifesto of ruling party in Pakistan. The present Government is going to implement SNC from April 2021 in all over the country at primary level. The academic capability of CWVI usually considered as non-disabled students due to their good cognitive skills. So, Directorate of Special Education Punjab adopted the same curriculum for CWVI. The present study is an effort to identify the standards, benchmarks and SLOs which are difficult to accomplish for CWVI. It is descriptive qualitative study by nature and curriculum review/document analysis technique was applied to study the SNC. In this way the complete syllabus of following 6 subjects were studied at early childhood and primary level; English, Urdu, Mathematics, General Knowledge, Islamiat and General Science. Collected information was coded; major themes were derived and interpreted by qualitative data analysis technique. Results revealed that a large number of standards, benchmarks and SLOs are easy to accomplish for CWVI as non-disabled children but many standards, benchmarks and SLOs are not easy to accomplish for CWVI. Study recommended that proper adaptations, modifications and accommodations should be made for

CWVI specially to attain the geometry, science and geography related standards, benchmarks and SLOs including adaptations proposed by Directorate of Special Education Punjab. Competent and trained teachers may be provided. Proper need based supportive material should be made available in all government special education institutions. Pictorial representations and visual tasks should be altered with some other learning tasks for CWVI.

**Keywords:** Single National Curriculum, Children with visual impairment, education

## **STEMS122: IMPACT OF CO-CURRICULAR ACTIVITES ON STUDENT ACHIEVEMENT AT SECONDARY LEVEL**

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The study had been designed to Find out the impact of Co-curricular Activities on Academic Achievement of students at secondary level in Islamabad. The objectives of study were: “to investigate the impact of co-curricular activities on academic achievement, to compare the co-curricular activities and academic achievement among the male and female students;” The research was based on hypothetical statement i.e. “There is no impact of co-curricular activities on achievement of students at secondary level in Islamabad”. Keeping in view the resources in terms of time and money the research was conducted on all the male and female students enrolled at secondary level in the session of 2018-2019 in the schools of Islamabad. The population of the study was approximately 48,000 through random sampling 100 male and 100 female students were selected for data collection. A questionnaire was designed for the student which is based on Co-

curricular activities. The data was collected through the personal visit of researcher. The data was analyzed and interpreted in the forms of tables. For this purpose, T-test, Regression and Percentage was used as statistical tool. Results showed that there is a positive impact of Co-curricular activities on student achievement. Results also showed that female students were actively participated in co-curricular activities as compare to male students at secondary level. Major recommendation of this study was school administration may create lively, Cooperative environment and encourage the students to take part in Co-curricular activities in school.

**Keywords:** Co-curricular Activities, Academic Achievement, Cooperative Environment

### **STEMS123: COMPARATIVE STUDY OF EARLY CHILDHOOD TEACHER EDUCATION PROGRAM OF PAKISTAN AND MALAYSIA**

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The objective behind this study was to enhance the understanding about how much important is to provide training to early childhood educators. The remarkable aspect of this study was comparison between two countries where early childhood teacher education programs were being offered. The researcher selected Pakistan and Malaysia from Asia Pacific region, and compared their early childhood education policies, practices related to early childhood teacher education programs, and extracted similarities and differences in both systems. To examine these processes a mixed-method approach was utilised by using a parallel convergent design. To materialise the research objectives, a qualitative approach with documentary analysis was employed, the findings of review of selected policies of both countries revealed that a huge gap exists even in realising the importance of early childhood

education and teacher education as Malaysia is having more than 92% early childhood teachers with diploma, on the contrary, the policies in Pakistan still merely on suggesting two years training for early childhood teachers yet. The data collected from semi-structured interviews were recorded and interpreted using thematic analysis. The findings showed that early childhood industry in Malaysia has progressed a lot as compared to Pakistan. Malaysia is having very organized teacher education programs from diploma to master degree, but the one of the institutions (Sample) in Pakistan was offering honors program in ECE while the other master degree program, no hierarchy of programs was observed there. A quantitative approach with survey questionnaires was observed. The data collected from the responses of surveys on 5-point Likert type scale, was analyzed using Statistical Package for Social Science (SPSS) and Independent Sample T-Test was employed. The findings of surveys showed that respondents of both countries affirmed the significance of early childhood teacher education. In short, this thesis examined the two systems, understanding the similarities and differences lie in the early childhood teacher education systems of Malaysia and Pakistan helps potential consideration of Malaysian early childhood teacher education system as a benchmark to upgrade EC teacher education programs in the institutions of Pakistan. For the purpose, the development of comprehensive policies with no huge gap between aspired and implemented needs to be processed, a systemized hierarchy of monitoring mechanisms to be developed, and continuous professional development of existing faculty in early childhood teacher education programs aiming to prepare not just degree oriented but true early childhood prospective teachers.

## **STEMS124: PROSPECTIVE SCIENCE TEACHERS' VIEWS ABOUT ONLINE TEACHING DURING COVID-19: A QUALITATIVE STUDY**

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Pandemic of COVID 19 adversely affect the educational systems of all over the world. To maintain the social distance online learning is introduced all over the world. This new drive of online learning is facing lot of challenges in its application. The major objective of the present study was to explore the views of prospective teachers' of science during COVID-19. Qualitative research approach was applied and semi structure interviews were conducted to know the views of prospective teachers regarding their online learning experiences. Twenty students (10 male and 10 female) of Bachelor of Education (B.Ed.) program studying at Allama Iqbal University were conveniently selected to collect the data. A semi-structured interview protocol was developed for data collection. Interviews were recorded and transcribed for thematic analysis. After thematic analysis, themes were generated. Majority of the participants were of the opinions that online teaching is insufficient to get mastery of teaching of science subjects. Moreover, they faced the issues connectivity to learning management system portal during online classes. Provision of good internet services for students during online teaching was recommended.

**Keywords:** COVID-19, Learning problems, Prospective Teachers, B.Ed (science).

## **STEMS125: 'GENEALOGY' OF FANATICISM: A FOCALDIAN STUDY OF MY SON THE FANATIC BY HANIF KUREISHI**

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This research article aims at exploring the ‘Genealogy’ of fanaticism in the screen play; My Son the Fanatic by Hanif Kureishi by keeping in view Michel Foucault’s reading of this play. Genealogy, according to Foucault, does not inquire into the timeless conditions which endures in the subject throughout history, but rather examines “the constitution of the subject across history which has led us up to the modern concept of the self”. In this research paper, the present reasons and causes will be at focus which generates restlessness in a Muslim family while living in a diaspora community. This is an attempt to have a glimpse of the lives of those people who migrate from Asian countries to the West in order to get a lavish life style. In order to have a prosperous life they lost their own selves and belong to nowhere.

### **STEMS126: A STUDY TO EXPLORE THE RELATIONSHIP BETWEEN TEACHING SKILLS AND ACADEMIC ACHIEVEMENT OF PROSPECTIVE TEACHERS**

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The purpose of this study was to find out the relationship between teaching skills and academic achievement of prospective teachers. Major objectives of the study were to assess teaching skills of prospective teachers and to determine the relationship between teaching skills and academic achievement of prospective teachers. The study was quantitative in nature. The target population of the present study was all prospective teachers enrolled in the Department of Education, University of Sargodha. Purposive sampling technique was used to select a representative sample of the population; sixty (60) prospective teachers of B.S 4th & 7th , the fifty (50) prospective teachers of B.Ed. (horns) 4th & 7th semester and all the forty (40) prospective teachers of M.A 3rd semester who were on teaching practice were taken as

sample. There were two research instruments one was questionnaires and the second one was an observation check list for data collection. Descriptive statistics including mean, standard deviation, percentages and frequencies were used in analyzing data. Moreover t.test and correlation test were used. The major findings of the study were that there is no difference between teaching skills of male and female prospective teachers and there is a weak positive relationship between teaching skills and academic achievement of prospective teachers. Therefore, it is recommended that curriculum designer and administration of education departments should increase the duration and frequency of teaching practice.

**Keywords:** Teacher Education, Teaching skills, Teaching Practice, Academic Achievement

## **STEMS127: EXAM STRESS AT SECONDARY SCHOOL LEVEL: A STUDENTS PERSPECTIVE**

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This study was conducted to find out the causes and effects of exam stress on students at secondary school level in federal government schools of Islamabad. The sample was consisted of 150 students. The questionnaire was used for data collection. Their responses were analyzed and presented in the form of percentages. This study reveals the fact that students really feel the pressure of examination which is in common words exam stress. As per the students Examinations are a good means to test the ability of the students but it causes stress. Majority of the students had symptoms of exam stress. According to the students exam stress causes loss of self-confidence, creates self-

contradictions, helps to explore concealed avenues of knowledge, and frustration was the outcome of exam stress. The students opined that if pattern of papers are discussed in class, exams stress will be low. It is recommended to utilize relaxing and counselling techniques to overcome exams stress.

**Keywords:** secondary students, exam stress, ability, assessment, counselling techniques

## **STEMS128: ANALYSIS OF CURRICULUM FOR GLOBAL CITIZENSHIP EDUCATION IN PRE-SERVICE TEACHER EDUCATION IN PAKISTAN**

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Global Citizenship Education (GCED) could prove to be the best solution to prevent violent extremism as it will sustain a respect for all and build up a feeling of having a place with humankind. To meet the target 4.7 of sustainable development goals, it is important to focus on global citizenship education at all levels of education in general and in pre-service teacher education in particular so that the message and practices reach the young masses. The pre-service education is imperative to develop knowledge, skills and disposition of prospective teachers. The current study was conducted to investigate the integration of GCED in Pre-service teacher education curriculum of Pakistan. The study was delimited to B.Ed (hons) Elementary Education programme. The curriculum of B.Ed Elementary developed by Higher Education Commission was analyzed through Curriculum Alignment Matrix. 31 course outlines were analyzed and percentage was used to analyze the level of integration of GCED in courses. The analyses depicted that the

concepts of civic sense, tolerance, duties and rights of citizens and fundamental rights of humans partially aligned in a few of the courses. The tolerance, active citizenship, and respect for cultural diversity and religious harmony are evident in Pakistan Studies and teaching of social studies courses. The relevant books are also mentioned as resources in these courses. The intercultural understanding is not very evident while globalization is mentioned in a few courses. It is recommended that a deliberate effort may be made to integrate concepts of Global Citizenship Education so as to enable the prospective teachers in developing necessary skills to play their active role in promoting peace and building resilience to extremism in elementary school students. **Keywords:** Global Citizenship Education, resilience building, preservice teacher education, curriculum analysis

### **STEMS129: COMPARISON OF LIBRARY HABITS OF FORMAL AND DISTANCE LEARNING STUDENTS**

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This study compared the Library Habits of formal and distance learning students of Government College University, Faisalabad. The major objectives of this study were, To analyze the availability of the library facilities for formal and distance learning student of GCUF and to identify and compare the library habits of formal and distance learning students of Government College university, Faisalabad. To explain the objectives, following research questions were formulated, To what extent library facilities are available and accessible for Formal and Distance learners and Is there any difference in library use habits of formal and distance learners? The study was delimited to the Post

Graduate Formal and Distance learning students of GC University, Faisalabad only. Four hundred students, two hundred from formal department, and two hundred from distance learning education were selected by convenient sampling technique. Questionnaire was developed as tool of research. Reliability and validity of the research tool was ensured by employing statistical treatment and experts' opinion. Simple percentage was used to compare the opinions of respondents and to find out the results. Findings showed that distance learners have not library facility in the university. They have to visit public libraries. The study also identified the difference in library habits of formal and distance learners. It was recommended to establish a separate library for distance learners that would be equipped with latest books and technologies.

### **STEMS130: BIOLOGICAL POTENTIAL AND PHYTOCHEMICAL ANALYSIS OF CARICA PAPAYA SEEDS EXTRACT**

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Plant extract having antioxidant potential shows promising effects on human skin. The aim of the current study was to report the biological properties (antioxidant activity, total phenolic contents, total flavonoid contents) and phytochemical analysis of 80% ethanolic extract of *Carica papaya* seeds. The phytochemical analysis of the plant extract was carried out to explore its phytochemicals. The plant material was collected from Karachi, Pakistan and extract was prepared in 80% ethanolic solution. The ethanolic extract was subjected for the determination of its phytochemical analysis including total phenolic contents (TPC), total flavonoid contents (TFC) and antioxidant activity.

The DPPH results by using ascorbic acid as a standard showed that the ethanolic extract have good antioxidant activity (81.7%). The total phenolic contents (62.35 mgGAE/g) of the extracts was determined according to the Folin-Ciocalteu procedure and Amount of flavonoids contents (10.5 mgQE/g) was determined by using aluminum chloride colorimetric method. Phytochemical investigation confirmed the presence of secondary metabolites like alkaloids, glycosides, phenolics, flavonoids, tannins, saponins and quinones. The presence of secondary metabolites provides an excellent antioxidant activity to the plant thus it can be incorporated into various skin formulations and in-vivo and in-vitro studies may be carried out for cosmetic market.

**Keywords:** Carica papaya, antioxidant activity, total phenolic contents, total flavonoid contents, phytochemical analysis.

### **STEMS131: SCHOOL LEADER'S PERCEPTIONS ABOUT STEAM EDUCATION TO DEVELOP STEAM SCHOOLS IN PAKISTAN**

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The purpose of this study is to gain an understanding of the School leaders' perception about STEAM education to develop STEAM schools in Karachi. This study unveils the background information, aims, scope, objectives and researcher's interest in selecting the topic for research. This study was conducted with three school leaders working in private STEAM schools in Karachi. Qualitative research design was used to conduct the study about the perception of School leaders who have implemented STEAM Education in schools. Data was collected from three STEAM schools in Karachi. Semi- structured interviews were used to collect the data which were design to explore the perceptions of School leaders about STEAM education. This study

aimed to have better understanding about leaders' own experiences, their preferred teaching style, their vision of STEAM instruction, and their practices feedback at school level. Data was coded and categorized into themes by thematic analysis technique to analyze the data. This study identified that knowledge about STEAM education, Perceived importance of STEAM Education, Integration of STEAM education, Practices of STEAM education and future perspectives of STEAM education are the main factors to develop STEAM schools in Pakistan. Findings of the study revealed that school leader should have background knowledge about STEAM education. School leaders should devise some activities at initial level and align traditional subjects with STEAM subjects in order to integrate STEAM in school. Professional development training for teachers is needed to practice STEAM in classes. School leader emphasized on importance of STEAM education that STEAM prepares students for the world beyond and develop 21st century skills. School leaders believed that students studied in STEAM schools successfully pursue their careers in the field of science and Technology. This study also has some limitations and discusses some recommendation for the implementation of STEAM education in Schools.

**Keywords:** STEAM education, Perceptions of school leader, STEAM schools.

### **STEMS132: FAMILY INVOLVEMENT IN EARLY CHILDHOOD EDUCATION AND ITS EFFECTS ON THE PUPILS**

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Family involvement plays a vital role in the early childhood education and training. The objectives of the work was to observe the effects of family involvement on the achievement of children. The population of study was all private schools of five towns of Lahore city. A sample of 40 student's parents were selected through stratified random sampling technique. The study used a qualitative research design, in which interview protocols technique was used to collect data and evaluation were done by using content analysis method. The results indicated positive effects of family involvements on the achievements of the children. The socio-demographic features of the families like higher level of education, income and profession have significant effects on the family involvement and children's outcomes. Among the family members, mothers were more involved in educational activities of the young children. Certain factors like school preparedness, homework assistance, appreciation, transportation and support in studies have positive impacts on the performance of the young children in learning process. A comprehensive electronic media program should be launched at policy level for family involvement in children's education. Multidimensional effects of family involvement and their effects on children's accomplishments need further research.

**Keywords:** Family-involvement, socio-demographic, profession, homework, achievement, children

### **STEMS133: THE IMPACT OF PARENTAL INVOLVEMENT ON STUDENTS ACADEMIC PERFORMANCE: A CASE STUDY OF DISTRICT BAHAWALNAGAR**

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The purpose of this research was to examine the relationship between parental involvement and the academic performance of their children. It was assumed that higher the parental involvement in child's education, higher will be the academic performance of the child. The current research was supported by the social learning theory. The study used a quantitative research approach. Data was collected by using a well-structured questionnaire from district Bahawalnagar. The sample size was 351 students and their parents. Three dimensions of parental involvement, i.e., parenting, parent teacher communication and family support were found positively related to child's academic performance. Results further indicated that family support was the most significant factor that determines a child's educational performance. Most of the parents considered themselves to have a good communication with the child's teacher. It was concluded that parental involvement in child's education is very important and have positive impact on the academic performance of the child. SPSS was used to test the hypothesis. Pearson's correlation showed that higher the parental involvement has significant association with higher academic performance of the child. The research showed that the parental involvement is most essential to perform better in exams and achieved good academic grades. The future researchers should come forward to replicate this research in others districts of Pakistan and create awareness among parents regarding their involvement in child's academic performance.

**Keywords:** Parental Involvement, Academic Performance, Parenting, Parent Teacher Communication

## **STEMS134: IMPORTANCE OF TEACHER TRAINING REGARDING ONLINE STUDIES**

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This study was carried out in Islamia University Bahawalpur to verify the level of online learning tools and find out the level of understanding of both the teachers and students towards using it. Research objectives are identifying the problems of online education and understanding of online system, tools to attend and conduct their classes online. Descriptive survey research design was adopted for the study. A research sample of minimum 100 respondents in the study. Questionnaires designed for the teachers and the other for the students of Islamia University. Findings from the study revealed that online learning requires teachers to have a basic understanding of using digital forms of learning. However, this is not the case always. Very often, teachers have a very basic understanding of technology. Sometimes, they don't even have the necessary resources and tools to conduct online classes. To combat this, it is important for schools to invest in training teachers with the latest technology updates so that they can conduct their online classes seamlessly.

**Keywords:** Understanding, digital forms, Technology, knowledge.

### **STEMS135: EFFECT OF FORMATIVE ASSESSMENT ON STUDENTS' ACHIEVEMENT IN APPLICATION DOMAIN IN PHYSICS AT SECONDARY LEVEL**

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The formative assessment process provides the evidence about the achievement of students. These evidences are collected during classroom instruction. The main purpose of these evidence is to make decisions about learning and instruction. This evidence provides the way towards the intended learning achievement. Formative assessment is assessment for learning. Assessment for learning is linked with the teaching-learning process. The learning out comes of students increases because of formative assessment. In formative assessment, the process of feedback is the key factor. The feedback is about the progress towards targeted learning outcomes. This provide the stronger support to the student in classroom. Due to the reflective nature of formative assessment professional growth increases. The teachers check student's level of understanding during instructional time. Different tools are used by the teacher for determining the current status of students understanding. Teacher also try to know the previous knowledge of students and also identify the gaps and misconceptions in the teaching-learning process. The application ability play a significant role at secondary level. In the Formative assessment students reflect on and monitor their own work. The information gained during the learning process guides teachers' decisions in how to enhance teaching and learning. The main purpose of this study was to find the effect of formative assessment in the application ability of the students at secondary level. In this study pre-test post-test equivalent group was used. The tool of the study was the achievement test. The data of the study was the marks in the achievement test. The student of experimental group received the treatment. The analysis of data was done by using t test. The result shows that the formative assessment improve the achievement of the students' application ability at secondary level. So, it is recommended that teacher may use the formative assessment in the classroom for the physics teaching at secondary level.

## **STEMS136: CONTEMPORARY AND TECHNOLOGICAL ISSUES OF GRADUATE DESIGNERS EDUCATION AND LACK OF SKILLS CREATE GAPS BETWEEN INDUSTRY AND ACADEMIA**

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In all over world Art and Design institutes play important role for producing artist and designers. Artist are responsible to alive art and design in surroundings by creativity and positive attitude towards institutes and industries, institutes through academics activities and quality of education provide professional, skilled designers to industry. Due to contemporary issues of graduate designers' education and lack of skills, less awareness of software technologies and not familiar use of digital devices required by textile industry create gaps between industry and art institutions. This research aims to identify the contemporary problems of university education, problem facing textile industry from new designers and professional attitudes towards textile industrial designs, understanding of design requirements and technicalities of printings. Methodology adopted by the researcher is survey through questionnaire on likert scale and interviews of designers, studio heads and CAD/CAM employees. Industry needs designers more skilled, full of understanding in digital media, techniques with all requirements which lacks in new graduates due to less practice in digital media and lack of awareness about tools. Research findings shows through the cluster bars with percentage ratio, comprising data analysis with different aspects. Research concluded full fill the gaps between industry and academia. Redesign art and design curriculum and its content, improved teaching methodology, provide professional well-equipped labs for students and industrial visits for digital devices and professional knowledge awareness.

**Keywords:** contemporary issues, technology, industrial digital devices, teaching methodology

### **STEMS137: PARAMETERS FOR THE ASSESSMENT OF STUDENTS' PERFORMANCE**

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The current study aimed to identify the Parameters for the Assessment of Students' Performance among Universities of Punjab, Pakistan. The main objectives of the study were: (1) to examine the different aspects of students' assessment, (2) to compare the views of Teachers about students' performance on gender basis. It was descriptive study and survey method was used to collect the related data. This study was delimited to Tehsil Bahawalpur. Population of the study consisted of all the Teachers of Two universities (Islamia University Bahawalpur and Government Sadiq Women University Bahawalpur). Convenient sampling technique was used to select the sample from population. The sample consisted of 20 Teachers From four Departments (Education, English, physics and Chemistry). 5 Teachers from each department. The instrument used for data collection was a questionnaire contained 20 closed ended items (the questionnaire divided into four sections (Assessment of students through assignments, Assessment of students by checking their confidence, Assessment of students by giving feedback, Assessment of students through inter-personal behavior), each section has five questions.) bases on four point likert scale (from strongly agree to strongly disagree).The researcher personally visited the all sampled universities and collected the data. The return rate was 80%. Mean, standard deviation, and difference of means were

computed. To measure the significance of the difference between the means of two groups, a t-test of independent sample was applied. Collected data were fed into the “statistical package for social sciences” (SPSS) program. Data were analyzed by applying the t-test for independent samples. The results of this study revealed that assessment of students by checking their confidence and giving their feedback is better than assessing their performance through assignments. The strong interaction between teachers and students may also improve through inter-personal behavior. The study also suggests that Teachers should develop a proper rating and measuring scales for assessing students’ performance.

**Keywords:** Parameters for evaluating students’ learning, assessment of students, students’ performance.

### **STEMS138: CONCEPTUAL AWARENESS OF TEACHERS ABOUT STEM EDUCATION AT SECONDARY SCHOOL LEVEL**

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The present era elaborates the idea that technological sciences is not complete without the addition of STEM. Modern inventions and discoveries are due to the practical use of science and technology in educational institutions. STEM engages all the essential subjects; science, engineering, technology, and mathematics at school level, so, it deals the above-mentioned subjects in a single disciplinary program. Presented study aimed at to examine the conceptual awareness of teachers about STEM education at secondary school level. To achieve the aim of the study, descriptive research method was used. The study was comprised on the secondary school teachers and head teachers of Southern Punjab and upper Punjab. So, the population of the study were the Divisions of Multan, Bahawalpur, and Lahore. Purposive sampling

and snow ball sampling techniques were adopted to reach the target sample. The sample were selected from the public and private school teachers and head teachers of district Bahawalpur, Multan, Vehari, and Lahore city. The data for the existing study were collected with the help of two self-constructed tools questionnaire and semi-structured interview, each for teachers and headteachers respectively. Questionnaire has included 38 items. In these items were included Dichotomous statements, statements with five-point Likert scale and open-ended questions. Semi-structured interview was included 11 questions. Data were collected from the 100 teachers and 11 head teachers. Two types of data were collected quantitative and qualitative. Quantitative data were analyzed through (SPSS). Quantitative data were presented in tabulated form which show the means, standard deviation, and frequency while qualitative data was thematically analyzed. Findings of the study revealed that staff members are aware with the concept of STEM Education. Findings also reveal that they don't know about the importance of STEM education as well as it is needed. Some hurdles are lies, which are lack of awareness programs, teacher's professional development, and lack of STEM workers. Curriculum should be revise according to STEM program.

### **STEMS139: ONLINE TEACHING AND LEARNING DURING COVID-19, PROBLEMS AND STRATEGIES USED BY UNIVERSITIES**

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The Main focus of this study was observed the problems and strategies used by Universities during Covid-19 Pandemic faced by teachers and students. All departments for Bahauddin Zakariya University Multan were selected as a population for the study. Two departments of Bahauddin Zakariya University Multan were taken as a sample of the

study. The Researcher delimited the study in two different departments of Science and Arts at Bahauddin Zakariya University Multan. It is a qualitative study. The research used Semi structured interviews for teachers and students as a tool of research. The teacher's interview consists of five questions one is open ended, and four questions are close ended. The researcher conducted interviews for students consist on five questions. Thematic analysis was used to analyze the data. The study concluded the teachers and student faced a number of problems during online teaching and learning. Electricity failure disturbed much online learning. Slow net speed, weak net signals in rural areas created a lot of problems for students as well as teachers. Noises at home during online learning and teaching created hurdles both for teachers and students. Availability of electricity and good speed of net in all areas of Pakistan is necessary for successful online learning. Teacher should be trained also for online teaching.

**Keywords:** Online Learning, COVID-19, Students, Teachers, Universities

**STEMS140: CHALLENGES OF TEACHING ENGLISH LANGUAGE IN A MULTILINGUAL SETTING: AN INVESTIGATION AT GOVERNMENT HIGHER SECONDARY SCHOOLS OF BAHAWALPUR, PUNJAB, PAKISTAN**

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Punjab is a province of Pakistan that is multi-linguistic and multiethnic. In this area, the inhabitants speak a number of local languages for communication purposes, such as Punjabi, Urdu, Saraiki, Sindhi and Pashto. These languages are spoken by students who attend government schools. The purpose of this study was to examine the challenges faced by male teachers in higher secondary schools while teaching English in

their multilingual classrooms. The purposeful sampling was used and 10 male higher secondary school teachers from the government participated in the study. The data was collected through a semi structured interview protocol and classroom observation checklist. The data was analyzed using the methodology of thematic analysis. A number of challenges were revealed by the results of the study. Teaching English language in a multilingual context is an enormous challenge for the English teachers due to linguistic diversity in the classrooms. The students in the multilingual classrooms have lack of confidence to use English language because they hesitate to commit mistakes. The instruction may be inadequate to assist students in enhancing their proficiency in English. Code-switching is widely used by teachers to instruct students in multilingual classrooms. The study suggests that teachers should be trained in their multilingual classrooms to cope with the challenges.

### **STEMS141: UNDERGRAGUATE STUDENTS PERCEPTION ON THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN THEIR KNOWLEDGE BUILDING**

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The study determines at undergraduate students' perception on the use of ICT in their knowledge building. The aimed of this research was to conclude the use of ICT at higher level; including to investigate the

undergraduate students' perception towards ICT integrate with knowledge building. For attaining the key objective and best result understanding of the study, researcher used mixed method research. The population comprised of BS program of both male and female students of Bahauddin Zakriya University (BZU) and Women University Multan (WUM). The convenience sampling technique was used to select the sample of the study. Sample size was selected through sample calculating software (Raosoft). The targeted sample was divided as two hundred (200) students took from Bahauddin Zakriya University (BZU) because the population of Bahauddin Zakriya University (BZU) is larger than the Women University Multan (WUM) so researcher took maximum part of sample from Bahauddin Zakriya University (BZU) and One Hundred and thirty (130) students were taken from Women University Multan (WUM) as a sample due to small population. The included sample was size three hundred and thirty (330) students of BS program. For data collection, survey method was adopted and one questionnaire was developed by the researcher as a research tool for this research study. This research instrument was referred to students' perception on the use of ICT in their knowledge building. A mixed method questionnaire (research tool) consisted of thirty two (32) restricted items and one (1) open ended question. Likert type scale was developed by Rensis Likert in (1932). This scale was used for recorded the responses of students. These statements was scored by Likert Scale for better results of quantitative data. For qualitative data results, one (1) open ended question was given at the end of the instrument. The reliability coefficient of scale was respectively 0.810. The collected data was analysis by using descriptive and inferential statistics for better interpretation of results. The overall results indicated that majority of the students believed that use of ICT tool is valuable in their knowledge building. Students of Bahauddin Zakriya University (BZU) were comparatively better than students of Women University Multan (WUM). Male students were comparatively better than female students in using different tools of ICT in their knowledge building at university

level. However, no much difference in using different tools of ICT among students of different universities. Statistically, students of BS program have non significance difference.

The results of open ended analysis concerning the perception towards ICT help to enhance knowledge building capacities of students. In present research study, students were give suggestions to enhance knowledge building capacities that computers, internet, multimedia, digital libraries, computer lab, modern digital or technological environment should be provided in universities. Easy and quick access of eLearning and provide e-books to all students. Teacher should integrate their lecture with ICT tools and provide proper guidance about usage of ICT resources. Arrange extra classes for the practice of use of computer or digital libraries. Increase the variety of free books on internet. There should be removed the fake websites that show fake information and provided authentic material on internet.

### **STEMS142: CONDUCTING SWOT ANALYSIS FOR IMPROVEMENT OF QUALITY EDUCATION AND STUDENTS' COUNSELING IN PUBLIC EDUCATIONAL INSTITUTES IN RAHIMYARKHAN, PAKISTAN**

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A SWOT (strengths, weaknesses, opportunities, and threats) analysis of a public educational institutes can improve education program, teaching learning activities, can be the driving force for implementing change. Strengths and weaknesses are internal while opportunities and threats are external for an institute. A SWOT analysis is used to assist education managers as well as teachers in initiating meaningful change in a program and to use the data for activities improvement. This research was qualitative in nature and observation sheets and interview were used as research tools. This strategy is useful in any educational program, for educational institutes for benchmarking and improvement, for teachers to enhance capacity and delivery improvement, for education managers to improve education quality and human resource improvement. Strengths and weaknesses are revealed and adjustments can be made to curriculum, internships, learning activities, education policies, etc., are justifiable if based on a SWOT analysis of a program. Major improvements to a program can be a direct result of using this analysis with resources and system output quality and management standard and students' career counseling as well as choice of subjects' selection. SWOT analysis is also a unique tool for assessment & evaluation to quantify accomplishment and achievement of objectives and level of efficiency and performance. It was concluded that by SWOT analysis awareness teachers improved their skills and began to work smarter. It was explored that SWOT awareness improved quality of education and students' counseling by teachers. It was concluded that by SWOT analysis education managers utilized all available resources in proper and excellent way for teaching learning conducive atmosphere.

**Keywords:** Program improvement, Quality education, assessment, SWOT

## **STEMS143: IRAN'S ATOMIC DESIRE AND SANCTIONS FROM WEST**

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Iran's atomic desire was initiated in the mid Of 1950s, but remained lethargic for a insufficient ages afterward the Iranian Islamic uprising then has been renewed for a long time. The government reaffirmed Iran's position on its interest in nuclear innovation and ensured a peaceful nuclear program in the West. As the West claims, the central issue is not nuclear innovation, but the behavior of Iran as a liberal national with a longing that runs counter to the assistances of its nationals and the West. The nuclear program of Iran was advanced in 1953 without help of the US. The Iranian nuclear program is not without its problems since western countries have approved. The training inspects the western and Russian positions on Iran's nuclear desire and the efforts of the International Nuclear Vigor Activity to grasp a cooperation that meets the concerns of the global network and Tehran's demands. Rendering to international relations, it can fully elucidate the activities of the public, not the subtleties of foreign policy. Realistic theories that emphasize the search for power as the main motivation for state action do not adequately consider ideal and recognized influences such as the role of identity then the benefits of key figures in influential national action. The builder emphasizes the character of the idea, and the identity and welfares of certain performers who consider it to be formed by common ideas for determining the actions of the state. However, constructivist surfaces with ideologies behind state actions often disregard the fact that ideas are often used for drives strongminded by control controls. In short, both theories usually ignore the close link between power and dynamics of ideas in state action. Furthermore, as the new realists have claimed, the structure of the international system is, inter alia, the existence of effective mechanisms for conflict prevention, conflict resolution, and peace

assurance. Moreover, so in a disorder situation, this clearly affects the behavior of the state. It also sets certain limits for the behavior of states that exceeding them often incurs costs. “These earnings that in fulfillment of their ambitions and goals, whether strongminded by control thoughts or philosophies, conditions have to reflect physical issues”.

**Keywords:** Iran, Atomic desire, west, peace program, Unites states, Sanctions.

**STEMS144: REFLECTION REGARDING THE EFFECTIVENESS OF LITERACY AND NUMERACY DRIVE LND ON THE QUALITY OF PRIMARY EDUCATION**

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Technology is changing our world and literacy or numeracy is now essential for making sense of the landscape. Students’ experiences and instruction need to reflect these changes. Literacy simply means one’s ability to read and write. Numeracy means the ability to use mathematics in everyday life. Both skills are needed in order to function fully in modern life. Today’s classroom is radically different from the traditional one because technology is infused in lessons. ICTs are changing methods of teaching and learning in the educational institutes. Quality Education is necessary for every educational institute because it raise the morale, capacities and capabilities. Literacy and Numeracy Drive (LND) is an initiative of Punjab Government to raise the quality of primary education. It is one of the quality indicators which show the performance of each school. LND is a test based application that is installed in tablets. It comprises of MCQs of English, Mathematics and Urdu subjects, which is taken from the students of class three by

Monitoring and Evaluation Assistants (MEAs). LND improves both teaching and learning. This drive aims to create confidence in students by giving them opportunity to express themselves and enjoy learning. It takes into consideration basic learning of English, Urdu and Mathematics for students. Teachers take special LND classes to achieve the prioritized LND SLOs. The test consists of seven multiple choice questions related to Urdu, English and Mathematics. LND is a continuous process of assessment, feedback and corrective actions. The study was designed to analyze “Reflection Regarding the Effectiveness of Literacy and Numeracy Drive LND on the Quality of Primary Education”. The main objectives of the study were (a) To recognize the purpose of LND program. (b) To identify the use of LND program in public schools (c) To evaluate the effectiveness of LND program on primary school students. (d) To determine the benefits of ICTs in education. (e) To investigate the role of LND program in improving the quality of primary education. (f) To analyze the positive impact of LND program on both students and teachers. The data from 83 public schools was collected from Bahawalpur for study. The researcher collected the data by using a self-designed questionnaire, on 5-point Likert scale. Data was analyzed by two ways. First of all, frequency and percentages were calculated and then mean, T test and ANOVA were applied. The results of the study depicted that LND program is effective and helps in improving the Quality of Primary Education.

**Keywords:** Literacy, numeracy, quality, technology, primary education, literacy and numeracy drive, reflection, learning.

**STEMS145: CULTURAL IDENTITY, OPPRESSION, ISLAMOPHOBIA AND WOMAN; AN ISLAMIC FEMINISTIC READING OF NOVEL “I AM THUNDER AND I WON’T KEEP QUIET” BY MUHAMMAD KHAN**

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The Purpose of this study is to analyse the western ideas of terrorism, extremism, oppression, and racism in the perspective of Islamophobia faced by Pakistani Muslim women in western society in general but also parental, social and cultural restrictions at home being living in a displaced culture and society. The horrific 9/11 incident has profoundly led to the perception of Islamic religion with Islamophobia. This study hypothesises that whether it is Islamophobia or the male chauvinism of father, husband and brother in law, protagonist faces familial, social and political suppression being imprisoned in a patriarchal order. This study provides a critique of her bigoted treatment not only by the western society for being immigrant.

Pakistani Muslim Woman but also by her hereditary males and nemeses who compel her to follow into the footprint of the patriarchal model of a modest woman. This patriarchal model of a good woman is based on the characteristics of being obedient, submissive and complaint. This research has followed qualitative approach and data has been analysed by applying Islamic Feministic reading of Asma Barla's view of Islamic Feminism and Margot Badran's view of Re/Placing of Islam. The Study concludes that how the protagonist's life portrays her the paradox of the struggle against her oppression not only by the tyrannical conservative patriarchal system in Pakistani Islamic society as well as her persecution as Muslim ethnic woman in the liberal, modern, secular and open-minded UK in the name of Islamophobia.

### **STEMS146: PERCEPTION OF THE UNIVERSITY STUDENTS' REGARDING ACADEMIC ENVIRONMENT: A CASE STUDY OF THE ISLAMIA UNIVERSITY OF BAHAWALPUR**

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The environment is everything that surrounds us. It is viable enough to affect every sphere of life. The academic environment plays a significant role in preparing students for their professional life. Thus, the current study aimed to analyze the perception of the students of The Islamia University of Bahawalpur (IUB) regarding the academic environment. It enables us to explore the relationship between the learning environment and the academic achievement of the students and it assists in identifying the gender-based differences in the classroom settings. This study was delimited to The Islamia University of Bahawalpur. The research methodology was quantitative by nature. The data were collected by distributing questionnaire among The Islamia University of Bahawalpur's students. The questionnaire was prepared using five points' Likert scale, and the survey research technique was used to collect data from respondents. The population of the current study consisted of the students of The Islamia University of Bahawalpur. The sample size consisted of 200 respondents. Collected data were analyzed by using the statistical tool. Results showed that students have a positive point of view regarding the academic environment. They are of the view that the learner-centred approach is followed in IUB premises, and it has more positive effects on the academic achievements of the students. It has also boosted up their confidence. They believe that there is no gender-based discrimination done in classrooms' settings. Both male and female students have the right to participate in academic discussions, seminars, webinars, etc., and they treated equally without any gender bias. Such type of

environment also assists them in preparing for their professional life and they can perform better in future.

**Keywords:** Perception, University, Students, Academic, Environment.

### **STEMS147: RELATIONSHIP OF PARENTAL EDUCATION WITH ELEMENTARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT**

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This study aimed to assess the effect of parental education on elementary school students' performance. Population of the study was elementary school students of government boys schools of Tehsil Chishtian, district Bahawal Nagar and 300 grade 8 students were randomly selected for the study. Data of parents' education and students academic achievement were collected from school offices. The collected data were analysed statistically. It was found that the parental education did not affect students' academic achievement. It was concluded on the basis of findings of the study, that there is no relationship between parental education and students' academic achievement in government schools of Tehsil Chishtian district Bahawal Nagar.

**Keywords:** Parental Education, Elementary Students, Government School, Academic Achievement

## **STEMS148: INFLUENCE OF TIKTOK APPLICATION ON BEHAVIORAL CHOICES: A COMPARATIVE STUDY OF PAKISTANI AND AUSTRALIAN YOUNGSTERS**

As the world is progressing the new technologies are being discovered. In the modern world social media is a very essential part of everyone. Social media is all around the globe. Social media has connected different people from different places. Social media is a platform for the groups of all ages. Social media is now led by the New Generation. Through Social Media we connect with the society in a modern way. The majority of social media users is of youngsters. TikTok has been very famous among the youngsters. TikTok is modified version of Douyin Application which was created in China in 2016. TikTok has been the one of most rapidly spreading social media Application. There is also a role of Social Media Applications in the Behavior Changes Of Youth. According to Keitzman & Hermkens (2011) social media is a digital medium through which different aspects of information are transferred to other virtual communities and networks. Whereas the current availability of built-in social media and broad variety of stand-alone which are similar cause the challenge to means of social media. According To Merriam-Webster (2019) definition of social media in which it was stated that social media is platform of communication where the user build their own online platforms where they get connected, share information related to anything, personal messages and other content. According to Steve et al (2015) it is stated that social media plays a vital role in progress of social networks by letting a user to get connected with more individuals or groups while O'Keefe et al, (April 1, 2011) conducted a study on The Impact of Social Media on Children, Adolescents and Families in which it stated that Social media is a platform which we can use to save our memories in a documented form, we can also use social media to explore new things learn more easily. Through social media there can be created online communities through which the users can interact and

make new friends, exchange personal information. Social media is also used to share information and other content such as on social media the user can share documents, videos, pictures, audios. According to Hitesh Bhasin (2019) it is stated that social media has become a fundamental part of today's generations life. Today's generation spent most of their time on social media. They give priority to social media over the aspects which are more essential such as physical activities, sports, academics. There are many youngsters who get influence by the content they see on social media. They compare their lives with the ones they see on social media. They create low self-esteem for them. They compare their way of living and their physical appearance with their friends on social media. The young generation is more likely to get addicted to the social media which might lead them to negative aspects. Youngsters have made the social media use part of their life. The excess use of social media can lead to behavior change, health problems and mental illness. Youngsters are spending more time on social media whereas they are having lack of interest in their academics due to more usage of social media. Social media leads our youth to negative results. Youngsters are wasting their plenty of time by using social media platform. Social Media has changed the ways of communication in modern era. TikTok Application also has a very dark impact on youth. TikTok Application is leading the young generation to vulgarity and less ethics. TikTok application whereas are providing entertaining content to the public are unconsciously inculcating massive behavioral changes among the youngsters. The influence of these behavioral changes has to be identified as it could lead to mental illness, depression and social materialism.

### **STEMS149: IMPACT OF HINDI DUBBED CARTOONS ON CHILDREN'S BEHAVIOR**

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The study was designed to investigate the impact of Hindi dubbed cartoons on children's behavior. The main objective of this study were 1) to find out the impact of Hindi dubbed cartoons on children behavior 2) to analyze the effect of Hindi Dubbed cartoons on children's mother tongue. 3) to give suggestions to modify their behavior. The study was descriptive in nature. Parents from Bahawalpur city were selected as the population of the study. Whereas, 70 parents were selected (35 male and 35 female) for the data collection, a questionnaire based on 5 point Likert's consisting of close ended questions scale was used to collect data. Questionnaire was distributed among 70 parent (35 male and 35 female). The collected data were analyzed, tabulated and interpreted in the form of percentage, mean score and standard deviation. In the light of findings it is concluded that watching Hindi dubbed cartoons creates violence and aggression among children and it also affects the language of children. 5 Children are now using Hindi words in their daily life instead of using Muslim greeting words and other Urdu words. Hindustan is promoting their culture in Pakistan through Hindi Dubbed cartoons. The study recommends that parents should be careful in selection of cartoon channels for their children. They should prefer Pakistani channels. Hindi transmission should not be allowed by the government and by the cabal operators in Pakistan.

**STEMS150: CORPORATE SOCIAL RESPONSIBILITY (CSR) AND COVID-19 PANDEMIC: ISLAMIC PROSPECTIVE, CHALLENGES AND SOLUTIONS**

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The impact of unprecedented global economic and social crisis which has been emerged during COVID-19 pandemic, can be traced in every span of life. In particular, people and countries with low income were among the hardest financially hit as well as socially. Hitherto, it is observed that, despite facing the recession due to COVID-19, Corporate Sector has the potential to play its vital role , Corporate Social Responsibility (CSR) with regard to philanthropy , volunteerism, environmental conservation, socially conscious investments and improved labor policies, in the time of pandemic. This research paper takes a view of Corporate Social Responsibility (SCR) standpoint principles and practices in relation to pre and post COVID-19 situation. Furthermore, this research paper also aims to investigate and determine the mala fide intentions and clandestine strategies of corporate sector to extract more money from affectees of Pandemic. Another key point discussed in this paper is : how does Islam deals the issue of corporate social responsibility (CSR)? By examining all the arguments, and putting them together, some practical suggestions are given in the end for the uplifting and betterment of Human Society.

**Keywords:** Corporate Social Responsibility (CSR), COVID-19 Pandemic, Islam,

### **STEMS151: IMPACT OF SELF-EFFICACY ON ACADEMIC STRESS AMONG UNIVERSITY STUDENTS**

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This present study aims to assess the effect of self-efficacy on academic stress in university students. The sample was comprised of 174

university students both males and females. Sample was justified from A-priori sample size calculator for linear regression (Soper, 2021). Data were collected only from Islamia University of Bahawalpur. In this correlational research, data were obtained through random sampling technique. The data was collected through online mode by formalizing google forum, circulated through Facebook and WhatsApp groups. The online survey consisted of demographic information sheet, informed consent, 10-item General Self-efficacy Scale (Schwarzer & Jerusalem, 1995) and 18-item Perceptions of Academic Stress Scale (Bedewy & Gabriel, 2015). Study findings suggested that there was significant negative correlation between self-efficacy and academic stress ( $r = -.18^*$ ,  $p < .005$ ) that depicted that decline in self-efficacy increase the academic stress. Additionally, the regression analysis revealed that self-efficacy was found significant predictor of academic stress with 67% of variance. Moreover, academic stress was found higher in female university students as compared to male university students, while male university students have higher self-efficacy as compared to female university students. Implications suggested for future studies was to explore other stressors and to organize workshops in enhancing self-efficacy on the way to overcome student's stress related to academic as well as in other fields of life.

**Keywords:** self-efficacy, academic stress, university students, regression analysis

## **STEMS152: IMPACT OF COVID-19 STRESS ON MENTAL HEALTH OF HIGHER LEARNING STUDENTS OF PAKISTAN**

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The current study was objectified to assess the effect of COVID-19 stress on mental health of higher learning students of Pakistan. Sample was justified by employing online A-prior sample size calculator (Soper, 2020). The sample was comprised of 160 higher learning students studied in different universities of Pakistan. Both male and female students (age 18-35 years) equally participated in this research. Sample was taken through simple random sampling technique. Only undergraduate, postgraduate and doctoral level of students were included in this study from all over Pakistan. The data were collected through online medium by preparing google document and circulated via Facebook and WhatsApp groups. Consent was taken from the participants and demographic information such as age, gender, and education were also asked. Two questionnaires were utilized for the purpose of data collection; COVID-19 Stress Scale (Taylor et al., 2020) and two sub scales (i.e. Behavioral Control and Positive Affect) from Mental Health Inventory-18 (Veit & Ware, 1983) were used. These two subscales depict the positive aspect of mental health. After completing the process of data collection, simple linear regression analysis was employed to test the hypothesis. The findings generated from the statistical analysis revealed that the COVID-19 stress have significant impact on mental health in higher learning students ( $\beta = .29^{**}$ ,  $p < .005$ ) with 68% of variance. Interestingly, results revealed that females have greater stress as compared to males. In this reference, educational institutes must provide stress free environment in this wake of COVID-19 for the students to enhance their mental wellbeing.

**Keywords:** COVID-19 Stress, mental health, adults, Pakistan

### **STEMS153: INTOLERANCE OF UNCERTAINTY AND FEAR OF COVID-19 AMONG EMERGING ADULTS**

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The current study intends to investigate the impact of intolerance of uncertainty on fear of COVID-19 among emerging adults. The sample was comprised of 100 participants, 60 females and 40 males with age range of 18 to 29 years. In this correlational research, sample was taken through purposive sampling technique. The data were collected through online medium via google forms, circulated through Facebook and WhatsApp groups. Two questionnaires were employed; Intolerance of Uncertainty Scale (Careleton, Norton & Asmundson, 2007) and Fear of COVID-19 Scale (Ahorsu et al., 2020). The collected data were analyzed by using SPSS (24.0) in which bivariate correlation revealed that there was significant positive correlation between intolerance of uncertainty and fear of COVID-19 ( $r = .76^{**}$ ,  $p < .01$ ). Moreover, intolerance of uncertainty depicted as significant predictor of fear of COVID-19 with 18 % of variance. Furthermore, results also depicted that intolerance of uncertainty and fear of COVID-19 was more prevalent among female emerging adults as compared to their male counterparts. This study implicated that increasing tolerance through coping strategies would be helpful in reducing the fear of COVID-19 among emerging adults.

Keywords: intolerance of uncertainty, fear of COVID-19, emerging adults

### **STEMS154: THE CAUSAL FACTORS OF COMPLEX PTSD IN EMERGING PAKISTANI ADULTS – AN EXPLORATORY STUDY**

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Complex Post Traumatic Stress Disorder (CPTSD) is a psychological disorder that develops because of prolonged, repeated experience of interpersonal trauma in a context in which the individual has little or no chance of escape (Cortman, 2018). The current study is aimed at identifying the causes of CPTSD in emerging Pakistani adults. The qualitative research design was employed in this study. Purposive sampling strategy was used to recruit 7 emerging adults (aged 18-29). The participants were screened for CPTSD using the International Trauma Questionnaire (Cloitre et al., 2018). After collecting data through semi-structured interviews that were audio-taped the data were then transcribed (Humble, 2016). Thematic analysis (Braun & Clarke, 2006) was employed to create and categorize pool of codes. These codes were used to generate themes which were then merged, modified, and discarded which resulted in 5 meaningful and coherent themes. These themes included experiencing domestic violence, witnessing sexual assault, childhood neglect and abuse, social isolation and non-traumatic stressors. Experiencing domestic violence had 2 sub-themes i.e. witnessing domestic violence and intimate partner violence. Childhood neglect and abuse was categorized into 4 sub-themes i.e. childhood neglect, childhood sexual abuse, childhood physical abuse and childhood emotional abuse. The findings of this research showed that although all the cases included repeated prolonged interpersonal trauma they were all unique and gave an insight into what kind of interpersonal traumas could eventually lead to complex PTSD in emerging Pakistani adults. Most of the traumas are concentrated in childhood and usually involve abuse at the hands of a family member. This study will help in the awareness of complex PTSD and the urgent need for it to be recognized and included in diagnostic manual, so it can be correctly diagnosed and individuals can get appropriate treatment.

**Keywords:** CPTSD, emerging adults, thematic analysis, Pakistan

**STEMS155: Incorporation of Aloe Vera to Increase the Nutritional Quality and Shelf Life of Chicken Nuggets**

Relationship between Alexithymia and Mental health in University Students

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This research was designed to assess the relationship between alexithymia and mental health among university students. For this purpose, a sample of 145 university students (age 18-29 years) was justified from A-priori sample size calculator for linear regression. The data were collected through random sampling technique by utilizing online google forms from the students of Islamia University of Bahawalpur (IUB). The google form consisted of demographic information sheet, consent form and two questionnaires i.e. Toronto Alexithymia Scale (Bagby, Parker & Taylor, 1994) and Mental Health Inventory-18 (Veit & Ware, 1983). After completing the process of data collection, results were generated by using SPSS (24.0). The substantial findings of this study were that there was significant positive association between alexithymia & mental health in university students ( $r=.38^{**}$ ,  $p<.001$ ). The regression analysis also demonstrated that alexithymia had significant impact on mental health ( $\beta=.13^{*}$ ,  $p<.01$ ) of university students with 18% of variance. Moreover, results also showed that males have experience more alexithymia as compared to female university students. Therefore, the current study implicated that helping the young adults in identifying and describing their feelings

would be helpful to overcome their mental health problem. Keywords: alexithymia, mental health, university students, online survey

## **STEMS156: IMPACT OF COVID-19 STRESS ON PHYSICAL ACTIVITY AND PSYCHOLOGICAL WELLBEING AMONG ADULTS**

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The present study aims to measure the impact COVID-19 stress on physical activity and psychological wellbeing among adult population. Samples was justified by employing online A-priori sample size calculator (Soper, 2020). The sample was compromised of 243 adults inducing 120 males and 123 females with an age range of 18 to 29 years. In this correlational research, sample was taken through random sampling technique. Data were collected from three major cities of Southern Punjab; Bahawalpur, Bahawalnagar, Rahim Yar khan. For this current study: three questionnaires were employed. One was COVID-19 stress scale (Taylor, 2019) and other was psychological wellbeing scale (Ryff, 1989). Correspondingly, physical activity was measured through physical activity questionnaire (Armstrong & Bull, 2006). The collected data were analyzed through SPSS (24.0) to test the hypotheses. The result generated from the regression analysis showed that the impact of COVID-19 stress has significant negative impact on physical activity ( $\beta = -.67^{**}$ ,  $p < .01$ ) and psychological wellbeing in adults ( $\beta = -.57^{**}$ ,  $p < .01$ ) with 68% and 57% of variance respectively. The data was only collected from major cities of Pakistan. That is why, more researches are needs to be conducted for impactful results.

**Keywords:** COVID-19 stress, physical activity, psychological wellbeing, adults

### **STEMS157: IMPACT OF FEAR OF COVID-19 ON FUTURE CAREER ANXIETY AMONG HIGHER LEARNING STUDENTS**

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The current study aimed to examine the effect of Fear of COVID-19 on future career anxiety among higher learning students. The respondents of these study were students of The Islamia University of Bahawalpur age ranging from 18-27 years. The data were collected from a sample of 176 students who filled the online google forms disseminated from Facebook and WhatsApp groups. Two questionnaires were employed in this research; Fear of COVID-19 Scale (Ahorsu et al., 2020) and Future Career Anxiety Scale (Tsai et al., 2017). The statistical analysis through SPSS (24.0) for bivariate correlation indicated that fear of COVID-19 was significantly positively ( $b=.34^{**}$ ,  $p<0.001$ ). associated with future career anxiety among the higher learning students. Further the findings of linear regression test showed that fear of COVID-19 had significant positive effect on future career anxiety ( $r =.64$   $p <.01$ ) with 64% of variance. The research results empirically found that due to the outbreak of COVID-19 human emotion significantly stuck with different negative aspects including the uncertainties about the future and career. Therefore, the psychologist should consider these research findings while making counseling plans for those in need.

**Keywords:** COVID-19 Fear, career anxiety, future uncertainties, higher learning students

## **STEMS158: THE IMPACT OF SOCIAL SUPPORT ON LIFE SATISFACTION OF UNIVERSITY STUDENTS: MEDIATING ROLE OF CORE SELF-EVALUATION**

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This research aims to gauge the impact of social support on life satisfaction of university students: mediating role of core self-evaluation. In total, 381 university students that were selected voluntarily from three public sector universities (IUB, PU & GCUF) of Punjab, Pakistan by using convenience sampling. The present research was quantitative in nature and cross-sectional design was applied. To measure the data, three questionnaires were used in this study; Multidimensional Scale of Perceived Social Support developed by (Zimet et al., 1988), Satisfaction with Life Scale (Diener et al., 1985) and Core Self-Evaluation Scale (Judge et al., 2003). The data were analyzed through SPSS (25.0). The results of bivariate correlation revealed that social support (friends, family & significant others) was significantly positively correlated with life satisfaction of university students. The results of mediation were tested through Process by Hayes (2013) and the results of mediation analysis found that the core self-evaluation was confirmed to be a significant partial mediator between social support and life satisfaction of university students. In gender differences, the results show that female students were higher in social support, core self-evaluation and life satisfaction as compared to male university students. The limitations and future avenues of this research have also been furnished.

## **STEMS159: EXPLORING PSYCHO-SOCIAL ISSUES OF PRE-OPERATIVE CARDIAC PATIENTS: A QUALITATIVE STUDY**

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Studies have shown that the individuals who are to undergo heart surgeries face unique physical and psychological challenges which may vary from culture to culture. Purpose: This study aimed to explore the psychosocial experiences of pre-operative cardiac patients in context to Pakistani culture and how it differs from the western culture. Method: A qualitative phenomenological research design was used to explore the psycho-social experiences of pre-operative cardiac patients. A sample of five pre-operative female cardiac patients with the age range of forty to fifty years was selected. The verbatim of pre-operative cardiac patients were jotted down and translated. Data was managed and analyzed through NVivo 11 plus to generate codes, themes, and master themes. A literature review was also conducted to have a multicultural perspective of psychosocial issues of pre-operative cardiac patients. Results: Results indicated three master themes that emerged in perspective to psycho-social experiences of the pre-operative cardiac patients, i.e. behavioral problems, emotional problems, and interpersonal problems. Conclusion: Pre-operative cardiac patients (females) come across a lot of problems in the behavioral, emotional, and interpersonal domains and these challenges are different from those in the western culture. It is vital to pay attention to these issues so certain strategies can be developed to manage such challenges and the standards of health care can be improved.

**Keywords:** Psychosocial issues, heart patients, behavioral problems, mental health issues, Qualitative research

## **STEMS160: THE EFFECTS OF POSITIVE EMOTIONS, GRATITUDE, HAPPINESS AND HOPE ON ACADEMIC ACHIEVEMENTS OF UNIVERSITY STUDENTS: A QUANTITATIVE STUDY**

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The current study was designed to investigate the effects of positive emotions: gratitude, happiness and hope on academic achievements of university students. Two hundred (200) students were taken through purposive sampling from The Islamia University of Bahawalpur belonging to various departments. The present research study was quantitative in nature and cross-sectional research design was used for the collection of data. The Gratitude Questionnaire developed by (McCullough, 2002), Subjective Happiness Scale (SHS) developed by (Lyubomirsky and Lepper, 1999; Avgoustaki, Dimitriadou, & Stalikas, 2012) and Herth Hope Index (HHI) developed by (Herth, 1992) were used for data analysis. Statistical Package for Social Sciences (SPSS 23.0 version) was used for data analysis. The result of study indicate that gratitude and subjective well-being predicted general self-efficacy and academic self-efficacy of university students. Future research could build on these findings by assessing the efficacy and regulatory behaviors of students after participating in university-based interventions aimed at increasing gratitude and subjective well-being. Suggestions for classroom and counseling interventions are provided.

**Keywords:** Positive emotions, Happiness, Gratitude, Hope, Academic achievements, Quantitative research

## **STEMS161: RELATIONSHIP OF SELF-ESTEEM AND DISTRESS INTOLERANCE AMONG EMERGING ADULTS OF BAHAWALPUR**

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The current study was intended to reconnoiter the levels of self-esteem and distress intolerance among emerging adults. The sample taken was of 100 participants (50 males and 50 females) with an age range from 18-29 years ( $M=1.76$ ,  $SD=3.84$ ). Correlational research design was used in the current study. The data was collected through non-random quota sampling technique. The two questionnaires were employed; Rosenberg Self-esteem Scale (Rosenberg, 1965) and Distress Intolerance Scale (Simons & Gaher, 2005). Different Statistical analyses were employed. Results from bivariate intercorrelation results revealed that there was a significant negative association between self-esteem and Distress Intolerance ( $r= -0.81^*$ ,  $p<0.05$ ) among adults. Moreover, results also revealed that males have high self-esteem as compared to females. Additionally, females have high level of distress intolerance as compared to males. Study findings suggested that increasing self-esteem in adults would reduce distress intolerance.

**Keywords:** self-esteem, distress intolerance, emerging adults.

## **STEMS162: EGO RESILIENCE AS A PREDICTOR OF STRESS COPING STRATEGIES AMONG SCHOOL FEMALE TEACHERS DURING COVID 19**

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There is a significant amount of researches that focus on stress but there are very few researches that focus on the impact of ego resilience and stress coping strategy, therefore, this study focuses on examining the ego resilience as a predictor of stress coping strategy among female teachers during COVID 19. The research was based on a quantitative correlational survey design. It was hypothesized that: 1- There will be a relationship between ego resilience and coping strategies of teachers during COVID 19. 2- Ego resilience will predict coping strategies of teachers during COVID 19. 3- There will be a difference in ego resilience and coping strategies between primary and secondary teachers. Data was collected through an online survey form. The total number of participants was N=202 (primary teachers=89; secondary teachers=75; =38) from Karachi, Pakistan. Ego resilience scale (Block & Kremen, 1996) and Brief-COPE scale (Carver, 1997) were used. This study aims to understand the relationship between stress coping strategies and resilience and how these can help to achieve prosperous outcomes. The results indicated a significant weak positive relation between ego resilience and approach coping strategy ( $r = 0.455$   $p < 0.01$ ), and a non-significant relation between ego resilience and avoidance coping ( $r = -.044$   $p < 0.01$ ). Findings also suggested there is a difference in ego-resilience and coping strategies between primary and secondary teachers ( $p = .030$ ). It has also been found that people who used the avoidance strategy have a low ego-resilience as compared to people who used the approach strategy. Present study identifies the difference of ego resilience in primary and secondary teachers. It also identifies the ego resilience in primary teachers is low and they need training and workshops, so they developed ego resilience. Training programs have to be developed and applied to teachers wherein they are trained in using digital tools for remote teaching.

**Keywords:** Ego resilience, stress coping strategies, approach coping, avoidance coping.

**STEMS163: GASLIGHTING: A QUALITATIVE STUDY OF SELF-DOUBT AND EMOTIONAL MANIPULATION EXPERIENCED BY FEMALES IN ROMANTIC RELATIONSHIPS**

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Gas lighting is a form of manipulation that sows seeds of uncertainty in an individual trying to make the targeted individual doubt their own sense of reality, memory, beliefs, and sanity. The current research aims to collect data on these potential characteristics that make someone susceptible to gaslighting. This study opted for qualitative research method by using purposive sampling technique. Females who have been in a romantic relationship for a minimum of 2 years were selected. Semi structured interviews were used to extract the data which were audiotaped. Data were collected to the saturation point which was 17. Extracted data were then transcribed (MacLean, Meyer & Estable, 2004) and carefully coded by using guidelines from “Coding Manual for Qualitative Researchers” (Saldana, 2015). Analysis was done by using NVivo (12). Initial codes were extracted from data which were categorized and merged in to themes on the basis of conceptual similarities. Themes were merged and refined to gain accuracy. Four main themes emerged which were Depression and anxiety, Cognitive Dissonance, Sense of Self-Doubt and Low Self-Esteem. Findings further suggest that neuroticism, higher sensory processing sensitivity, and intolerance of uncertainty could be personality characteristics that

make people susceptible to gaslighting. This study can be helpful for researchers, practitioners, and people who have experienced gaslighting. This research serves as a foundation for future research into other potential contributing causes in gaslighting, as well as the psychosocial interventions for gaslighting and mental abuse.

**Keywords:** Gaslighting, Thematic Analysis, Manipulation, Self-esteem

### **STEMS164: RELATIONSHIP OF EGO RESILIENCE, PERCEIVED SOCIAL SUPPORT AND DEPRESSION WITH JOB SATISFACTION AMONG WORKING FEMALES**

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This study is aimed to explore the relationship of ego resilience, perceived social support and depression with job satisfaction of females working in different sector (i.e. education, medicine, entrepreneur and others). After comprehensive literature review, it was hypothesized that there will be a positive relationship of ego resilience and perceived social support with job satisfaction, whereas there will be negative relationship of depression on job satisfaction. A sample of 135 working females were taken through purposive sampling. The age range of participants was between 25-50 years ( $\bar{x}=2.9$ ,  $SD= 1.3$ ). The measures, used in the study are: Demographic information form, Ego Resilience Scale (ER89) Block & Kremen(1996), Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet & Farley, 1988), Center for Epidemiologic Studies Depression Scale Revised (CESD-R-20) (Radloff, 1977), Minnesota Satisfaction Questionnaire (MSQ) (

Weiss et al. ,1967). Data was analysed using SPSS version 22. Correlation was conducted to find out the results. The study proved that ego resilience and perceived social support have a positive relationship with job satisfaction, whereas depression has a negative relationship with job satisfaction. Avenues for future research are open for different work settings including factors like ego resilience, perceived social support and depression among working women.

**Keywords:** Ego resilience, perceived social support, depression and job satisfaction.

### **STEMS165: POSITIVE SELF EVALUATION, ADAPTIVE COPING STRATEGIES AND ITS IMPACT ON PSYCHOLOGICAL WELLBEING AMONG ADOLESCENTS**

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The current study anticipated to reconnoiter the usage of adaptive cognitive coping strategies that regulates emotions through the lens of positive self evaluation and its impact on psychological wellbeing among adolescents. For this purpose, a sample of 120 adolescents (60 boys & 60 girls) was targeted with the age range of 12 to 18 years ( $M = 15.11$ ,  $SD = 1.87$ ). Sample was justified from A-priori sample size calculator for statistical analysis. The purposive sampling technique was used to select the sample. The data of 120 adolescents was collected through the process of in-person individual administration. The study utilized Urdu translated version of tools for the data collection i.e. Core Self Evaluation Scale (Fatima, 2018), Cognitive Emotion Regulation Questionnaire 18-items (Butt, Khawer, Malik & Sanam, 2012) and Psychological Wellbeing Scale (Jabeen, 2012). The substantial findings of this study revealed that there was significant positive correlation between positive self-evaluation, adaptive coping

strategies and psychological wellbeing ( $r=.74^{**}$ ,  $r=.78^{**}$ ,  $p<.01$ ). Moreover, usage of adaptive cognitive coping strategies to regulate emotions depicted as significant positive predictor of psychological wellbeing ( $\beta = .17^{**}$ ,  $p<.001$ ). In addition, mediation analysis showed that the relationship between usage of adaptive cognitive coping strategies and psychological wellbeing was mediated by positive self-evaluation. Moreover, results also showed that males have positive self-evaluation and used more adaptive coping strategies to enhance their psychological wellbeing as compared to females. The current study emphasized in identifying different adaptive coping strategies to enhance psychological wellbeing. Make effective management to overcome mental health problems incorporating in late adolescents. **Keywords:** Positive Self Evaluation, Adaptive Coping Strategies, Psychological Wellbeing, Adolescents

### **STEMS166: PROSOCIAL BEHAVIOR IN ADULTS: THE ROLE OF PERCEIVED PARENTAL STYLES AND SIBLING RELATIONSHIP**

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The present research aimed to explore the impact of perceived parental styles and sibling relationship on prosocial behavior among adults. The sample consisted of  $N = 202$  young and middle adult Pakistanis (Male  $n=63$  & Female  $n=139$ ) within the age ranges of 19-40 and 41-65 years ( $M=29.22$ ;  $SD=13.46$ ), respectively. They were approached through purposive convenient sampling. The measures used for data collection included; Prosocialness Scale for Adults (PSA), Parental Bonding Instrument (PBI) and Adult Sibling Familial Relationship Scale

(ASFRRS). It was hypothesized that 1) perceived parental styles (care and overprotection) will have an impact on sibling relationship among adults, 2) perceived parental styles (care and overprotection) will have an impact on prosocial behavior among adults, 3) stronger sibling relationship will have a positive impact on prosocial behavior among adults and 4) perceived parental styles (care and overprotection) and Sibling relationship will have a combined impact on prosocial behavior among adults. The results suggested that parents' care is found to be a significant predictor of positive sibling relationship also, a strong positive relationship was found between mother's overprotection and sibling relationship. Moreover, it was observed that mothers' care increases with age whereas their overprotection decreases with age along with this the parental overprotection is higher for girls than for boys. The findings also revealed a significant positive but weak relationship between sibling relationship and prosocial behavior, and no significant relationship was found between perceived parental styles and prosocial behavior. Also, no combined effect of perceived parental style and sibling relationship was found on prosocial behavior among adults. Hence, the hypotheses of study have been approved to a certain extent. Revealed findings can be implied in parental counseling, family therapies, educational settings and future researches.

**Keywords:** Perceived Parental style, Sibling's relationship, prosocial behavior, young adults.

## **STEMS167: A CASE STUDY OF HIGH FUNCTIONING AUTISTIC CHILD STUDYING IN INCLUSIVE SETUP IN VIHARI**

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The ability to communicate and interact with others impairs by autism which is a serious developmental disorder. It involves a range of restricted repetitive behaviors, activities and interests. Early recognition, educational, behavioral and family therapies may reduce symptoms and support in learning and development. The occurrence of autism is about 1–2 per 1,000 people worldwide, and it occurs about four times more often in boys than girls. Keeping in view the importance of the subject a study was conducted to know the patterns of case studies of high functioning autistic children studying in inclusive set up in Vihari. On the basis of the literature review a case study was developed and the 25 parents and their teachers of high functioning autistic child in inclusive set up in Vihari were randomly selected and personally interviewed. This is a qualitative research. The findings derived on the basis of data analysis shows that the child studied is autistic by birth. His parents knew about his disability at the age of 3 years. The symptoms of his disability were that he remained busy in his own thoughts and don't pay attention to anyone. He faces behavior issues in his study and language problems in communication. He has behaved friendly with his parents, teachers, classmates and siblings. He is extra ordinary and high functioning in his study. It is recommended that the parents should hire a speech therapist for him at home so that his language problems must be solved. He should also be taught phonetics time to time at the home.

**Keywords:** Community Development, Open and Distance Learning, Teachers, Students

## **STEMS168: DEPRESSION ANXIETY AND STRESS OF FEMALE YOUTH STUDYING MEDICAL AND HUMANITIES**

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The present study was intended to find the level of depression, anxiety and stress among female medical and humanities students. The sample was consisted of 200 female undergraduate students, among them 100 were medical students and 100 were humanities undergraduate students. Participants were taken from Nishtar Medical College and Bahauddin Zakarya University Multan. The age range of participants was 18-25 years. Depression, anxiety and stress scale (DASS) developed by Lovibond & Lovibond (1995) was administered. Results clearly indicate that lower levels of depression among female medical students as compare to female humanities students but stress as well as anxiety is higher among female medical students as compare to female humanities students. Moreover, three variables; depression, anxiety and stress are positively related. It is suggested that better institutional environment can be more useful for female students in their educational advancement to reduce such psychopathological symptoms.

**Keywords:** Depression, Anxiety, Stress, Medical/Humanities undergraduate students

## **STEMS169: SOCIAL INCLUSION OF PERSONS WITH DISABILITIES**

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Islam give the more emphasize on the rights of the disabled people, in the quran Allah Explain many ayats about the rights of the disabled and weak people and the ahadess of Prophet Muhammad ﷺ also emphasize the rights of disabled persons and the seerah of Muhammad ﷺ and his companions give us the way how to treat the disabled people of the society. Beyond this in this era UNO also decided to boost up the weak people of the society and educated them and facilitate them and they pay the role in the welfare and development of the society. For this purpose UNO was decided that to continue the Millennium Development Goals ending in 2030. There are 17 goals of sustainable development: ending poverty and hunger, good health, standard education, gender equality, clean water and drainage, durable energy, good employment and economic development, innovation and basic infrastructure, justified consumption and production, protection of the Earth, global prosperity, well-developed city and community, underwater life, life on the surface of the Earth, peace and justice, and future partnerships. In this article discussed only those points who are related to the rights of disabled people.

**Keywords:** Islam, disabled people, sustainable development.

## **STEMS170: SUBJUGATION OF MUSLIM UMMAH BY THE NEO-COLONIALISM**

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Every nation has its own, norms to live, culture, traditions, education policies and educational text but after the neo colonialism, with the end of the Ottoman Empire or the end of caliphate, Muslim ummah lost everything. Muslim ummah has forgotten their pride, culture, traditions and the most important thing is that they lost their religious thoughts

and educational system. They were badly subjugated by the European educational system. Muslim Ummah got tied up with European educational thoughts, their educational theories and their policies. That time Muslims had a Muslim body, but they lost their Muslim soul and Muslim ideology. They forgot how to rule on the world. There was a time when we, the Muslims, taught the whole world in every filed of life. People come to us for learning. We gave them scientific theories, technology, medical information, social theories, and religious thoughts. But now, where is the focus of Muslim ummah? And interesting thing is that Muslims do not know about their values and also, they do not seem to realize the causes to their downfall. Is the whole Ummah happy with his subjugation? This article is a short effort to awake up Muslim ummah. In this Article I'll discuss what is the colonialism? and it's bad and good impact on the Muslims ideology.

**Key words:** subjugation, Ideology, downfall, Muslim Ummah

### **STEMS171: THE ROLE OF SUFI LITERATURE IN THE PROMOTION OF THE PEACE AND TOLERANCE**

“امن و آشتی کے فروغ میں صوفی ادب کا کردار”

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Sufism is a way of life. It is a search of One's soul. Sufism and mysticism is not restricted to a particular region, cast, creed, race, and geography. It is a sacred journey to attain the secret of self and spiritual sublimity. Modern science inventions, hectic life schedule and materialistic approach has produced so many derogatory behavioural problems and severe conduct disorder like violence, anxiety, anger, irritation and intolerance etc. All these evils may easily be cured and tackled by promoting Mysticism in our society. In this article the role of Sufi literature for establishing tolerance, patience, and endurance has been discussed and specially Sufi's efforts promoting harmony and

peaceful co- existence has been focused. In the perspective of the current situation faced by our country, it is quite necessary for our society to attain proper guidance from the teachings of Sufi literature to resolve the differences between masses and endorsing original Mysticism and its allied teachings of contemplation and self- surrender.

## **STEMS172: A CRITICAL STUDY OF ‘URDU AFSANA. AIK SADI KA QISA’**

رحمان سرور باجوہ

پی ایچ ڈی ریسرچ سکالرز، شعبہ اردو و اقبالیات، اسلامیہ یونیورسٹی، بہاولپور  
“اردو افسانہ۔ ایک صدی کا قصہ” کا تجزیاتی مطالعہ  
اجمال:

انوار احمد صاحب اردو فکشن کے ممتاز نقاد ہیں۔ اس تحقیقی مطالعے میں ان کی قابل ذکر کتاب 'اردو افسانہ۔ ایک صدی کا قصہ' کا تجزیہ پیش کیا گیا ہے۔ ڈاکٹر صاحب کا اردو کے اہم ترقی پسند نقادوں میں شمار ہوتا۔ انہوں نے اردو افسانے کی تاریخ کو روایت کی شکل میں بیان کیا ہے۔ بنیادی طور پر ان کی یہ تصنیف دو حصوں میں مشتمل ہے؛ پریم چند کی روایت اور روایت کا حاصل مصنف نے اس کتاب میں دو سو پتالیس افسانہ لکھنے والوں کے فن کو جانچا اور پرکھا ہے۔ اس مقالے میں سب سے پہلے پوری کتاب کا مختصراً جائزہ پیش کیا گیا ہے۔ دوسرے نمبر پر تحقیق کے ان اصولوں کو مضمون میں جگہ دی گئی ہے جن کو مصنف نے اپنی اس تصنیف میں اختیار کیا ہے۔ تیسرے نمبر پر مصنف کی تحقیق کو تجزیاتی عمل کے ہمراہ واقفیت حاصل کرنے کی غرض سے دیکھا گیا ہے۔ آخر میں ڈاکٹر صاحب کی تنقید کو بطور ترقی پسند نقاد کے گہرا مشاہدہ کیا گیا ہے۔

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Anwar Ahmed is distinguished and esteemed critic of Urdu fiction. This article shows the study of his remarkable book, "Urdu Afsana - Aik Sadi ka Qisa". He is generally known as progressive critic of Urdu. He expressed the history of Urdu short story in the form of tradition. Basically this book is divided into two parts; tradition of Praim Chand and realization of tradition. The author has explored and

criticized the art of short story of two hundred and forty-five Urdu short story writers. In this article first of all an eye bird view is taken of his book. Secondly, principles of research which the author exercises in this book are conversed. Thirdly author's research along with analytical process is separately observed. Lastly being author is progressive critic his progressive criticism is deeply studied in this article.

### **STEMS173: EPIDEMICS, SEERAT E TYYABA AND OUR RESPONSIBILITIES**

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In the present era, the corona virus has shaken the whole world. Death has clutched its claws everywhere. Not only the 3rd world countries but also the developed countries are affected by it. The world medicine is trying hard to cure it, but no success is being facing it. The medical scientists are struggling hard to invent its medicine. Some countries are even succeeded but new types of Crona started. Therefore, every country persuades its people to take precautions. In particular, the emphasis is given on social distance. If these precautionary measures are judged carefully, we can conclude that, these are the same as what the Prophet (peace and blessings of Allah be upon him) said 1,400 years ago. This article will define the definition of epidemics, its types, global epidemics and differences between epidemics, history of global epidemics, Quranic causes, Corona virus, its causes, consequences and precautions that can be taken in this situation. All these will be seen in the context of the teachings of the Qur'an and Hadith and at the end of the suggestions and recommendations and our responsibilities will be presented.

**Key words:** Epidemics, viral, contagion, pandemic, endemic, malady

## **STEMS174: ROLE OF FAMILY HEAD IN THE UPBRINGING OF FAMILY DURING THE ERA OF SMARTPHONE AND SOCIAL MEDIA: CONTEMPORARY CHALLENGES AND THEIR ISLAMIC SOLUTIONS**

Maria Ashraf, Maqsood Ahmad, Tanveer Khawar

Home has always been considered as a basic unit of any society. The primary members of home are parent, children, brothers and sisters. It is observed that if the parents are observing religion properly, most probably their kids will do so. Otherwise, the kids are most likely to spend their life far from religious values. In present time, with addition to advantages that internet brought to human life, it also created many challenges for parents regarding upbringing of kids and their grooming. Internet cannot be avoided by any mean in our today life. There are a large number of web contents available to our kids which do not match Islamic social values. It is the core responsibility of parents to supervise and guide kids regarding using these gadgets. So the upcoming generation should follow the Islamic Values. Allah Almighty said in Holy Qur'an:

يَا أَيُّهَا الَّذِينَ آمَنُوا قُوا أَنْفُسَكُمْ وَأَهْلِيكُمْ نَارًا

O you who have believed, protect yourselves and your families from a Fire (Surah al-Tahrīm:6)

Prophet Muhammad (PBUH) said:

مَا نَحَلَ وَالِدٌ وَوَلَدًا مِنْ نَحْلٍ أَفْضَلَ مِنْ أَدَبٍ حَسَنٍ

This research paper is a humble attempt to address contemporary challenges of internet usage by kids at home and to derive solution from The Holy Qur'an and Sun'nah of Prophet Muhammad (Peace Be upon Him).

**Keywords:** Prophet (PBUH) Sun'nah, Family, Social Media, Internet, Kids

## **STEMS175: PROMOTING RELIGIOUS VALUES FOR SOCIAL SOLIDARITY: A NEED TO FOCUS ON TOLERANCE AND MORALITY**

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Social solidarity is a key element for the development of society as well as well-being of its members. Social solidarity is known as a strong sense of unity holding people together. Religion is the basic institution of every society, provide an opportunity to experience life in accordance with its prescribed values. It has a vital role to enforce law in the society in formal or informal ways. The aim of the present study is to highlight the possible problems faced by Pakistani community due to the lack of acceptance of religious (Islamic) values causing social disharmony in the society. The main focus was to know the importance of tolerance and morality in creating social solidarity. Secondary source of data was used to gain information relevant to the selected topic and about, 27 articles were reviewed. Form most of the studies, we found that deep understanding of each religious aspect set a platform to share common values. A number of studies mentioned that social intolerance is a root triggered by emotional behavior. We recommended that the implication of religious (Islamic) values is the necessity in developing social solidarity related to their own religion and culture. It is also suggested that educational institutions should contribute in developing tolerance and ethics among students. For that purpose, a model of social solidarity is developed.

**Keywords:** Religious values, Tolerance, Morality, Implications, Social solidarity.

## **STEMS176: STRIVING FOR TERROR-FREE SEA: TRENDS IN MARITIME TERRORISM**

Dr Sajid Mehmood Shahzad

The increase in transcontinental sea commerce, over the past few decades, is attributed to globalization. However, the vulnerabilities in the adaptation of coordinated security procedures to secure maritime trade and tourism and unregulated spaces in global maritime cooperation, have concurrently allowed the maritime domain to be used for illicit activities; including terrorism by violent non-state actors (VNSAs), organized pirates and robbers, and transnational crime syndicates for economic gains, trade disruptions, political motives of authoritarian or violent regimes, or simply as a threat to warn ships from entering waters occupied by terrorists. Terror attacks are expected mainly in coastal/brown waters rather than high seas, because of limited resources available to terrorists and lack of their marine related skills. Coastal areas, narrow straits and restricted water are more lucrative areas for maritime terrorism, contraband smuggling (CS) and illegal human migration (IHM). Considering the visible causes of this menace, this paper analyses the trends in maritime terrorism, which give a more quantitative insight to see the sea futuristically, and the present global security capabilities for its protection.

**Keywords:** Sea, maritime, terrorism, trend, global security

## **STEMS177: CREATIVE DESIGN OF KURTA CLOTHING BASED ON THE BUILDING SHAPE OF HUANGHE TOWER**

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In this paper, the kurta clothing elements are studied, and then the kurt clothing elements are innovated by using the pattern elements of Wuhan Huanghe tower. Here fully analyze Kurta's clothing

characteristics, fabrics, styles, colors, patterns, cultural and environmental background of the dressed people, including the research of different designers on the application of traditional elements and clothing innovation. After that a full analysis of the history, culture, profile and pattern features of the Huanghe tower (Yellow River Tower) in Wuhan. This is applied to the advanced design of clothing in Kurta. Its motivation comes from the tower structure of this buildings. The pattern and cultural characteristics are obvious. And with the help of embroidery and decorative means to achieve innovative design on Kurtas, the design of clothing seems to have a strong three-dimensional modeling beauty and traditional cultural advantages. Final step is innovative design of 4 series of kurta clothing. It is made partly by hand and partly by machine. Decoration is a feature of design. It includes a variety of technologies such as printing, decoration, and embroidery. It takes perfect taste and great skill. The final design of the garment sample effect is very beautiful, indicating that the research has a certain degree of effectiveness.

**Keywords:** kurta clothing; the Building of Huanghe tower; Creative design of clothing.

## **STEMS178: REVIVAL OF HUAYAO CULTURE AS A CONTEMPORARY FASHION OF CHINA**

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Huayao village has a beautiful culture of cross stitch embroidery on their garments both male and female. Their local women pay a keen attention to make their garments. They do very detailed worked in cross stitch Embroidery to enhance their garments. As a design element they take inspiration from their surrounding for example, animals, plants, flowers etc. But it seems like it's about to vanish because of their local people are now more interested in wearing western garments. So, the

purpose of this study is to address cross stitch embroidery on contemporary fashion garment which they like most and from Chinese famous Contemporary fashion garments brands. The concept is aimed to enhance cultural identity and also provide village people a source of income by doing embroidery on the garments.

**Keywords:** Huayao culture, cross stitch, contemporary fashion.

### **STEMS179: ATTRACTIVENESS OF ART EDUCATION AMONG PAKISTANI FEMALE**

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The purpose of this research is to analyze the various reasons why women pursue art education in Pakistan. In this study, the researcher explains the responses that obtained subject to women preferences for art education. Review of the respondents “the study reveals that women are drawn into art education due to various reasons.” The background information of the respondents was taken into account and the results show that the influences female access to art education. Comparisons between the female art teachers and art students were drawn. Questionnaires and interviews are the main tools with which data was obtained from the respondents of this study.

**Keywords:** Attractiveness, Art education, Female, Pakistan

### **STEMS180: A QUEST FOR SHARĪ‘AH BASED FINANCIAL INTERMEDIARY CORPORATION: A CASE STUDY OF MEEZAN BANK**

Dr. Naureen Akhtar , Attia Madni and Dr. Rao Imran Habib

This research work undertakes to explore the need of Sharī‘ah based framework for financial Intermediary Corporation that may tend to provide financing and investment facilities to the society without compromising the injunctions laid down by the Holy Quran and Sunnah. Financial intermediation, in sense of collecting savings/funds from the surplus units of the society and its provision to finance the needs of deficit units, is very much in line with Sharī‘ah injunctions. Obligation of zakāt, recommendation of sadaqāt and loan (Qarḍ), are the forms of personal financing. Though, they are appreciated and recommended by sharī‘ah but zakāt, sadaqāt and loans (Qarḍ) being tools of personal financing are not considered and appreciated as tools for assembling resources for investment, trade or business. Debt financing, instead of loan based financing however, is an acceptable and rewarding business activity as per ruling in verse 2:275-281 of the Holy Quran and has been in practice since ages. Financial intermediation, as an ‘industry’ developed four centuries ago, made the loan-based contracts as the basis of financing. The initiation and rise of Islamic banking industry changed the status quo of conventional set up and proved that financing does not necessarily have to take the form of loan contract rather it may be in the form of goods and services. The purpose of this study is three-fold; first to discuss the basic principles to be adopted by financial intermediary so that it can be within the realm of Sharī‘ah boundaries, second to compare the Sharī‘ah compliant financial intermediary with the financial intermediary bearing conventional set-up to spotlight the differences between the two. Lastly, this study aims to critically analyze the structure and functioning of financial intermediaries as banking companies and for this purpose Meezan Bank is selected to study its structure and functioning as a case study to evaluate that how far its claim to be Sharī‘ah compliant and Sharī‘ah based financial intermediary is correct.

**Key words:** Sharī‘ah based framework, Financial intermediary, Debt financing, Banking Company, Investment and Meezan Bank.

## **STEMS181: PARTY POLITICS IN PAKISTAN: A STUDY OF AWAMI LEAGUE**

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The role of political parties considered one of the major factors the political process in Pakistan. I focus the party politics in Pakistan during 1947-1971 with special reference of Awami League. Party politics of that time was highly complexed and complicated as the ruling party Pakistan Muslim League was divided in many factions, was replaced by United Front in East Bengal in 1954. I discussed the actual working of some of the policies of parliamentary Government and Military Government to assess its impact on the party politics of Pakistan. The disequilibrium arose in the development of the country's different sectors, such as economic and administrative which effected the nation building and state building process. There was great imbalance in power sharing mechanism among the different units of Pakistan. The most dreadful problem of Pakistan was the integration of the Bengali sub-nation. This problem was of great urgency that Bengalis were not merely the largest ethno-cultural sub-group but constituted a major portion of the total population of Pakistan. The representation of the Bengalis in the civil-military bureaucracy, the professions or the entrepreneurial class was very little at the time of creation of Pakistan.

In this situation the migrants from India and the Punjabis became the national elite class of Pakistan state-structure. Awami League emerged to secure the interests of Bengalis. It was against the policy of centralization of the political administration as they were not participant in the Centre and were not even empowered in their own province. The demand for full provincial autonomy was put forth in 1950, when the first draft of the constitution was succumbed. The demand for autonomy drew growing public support. That is why United Front succeeded to out Pakistan Muslim League from East Pakistan in the election of 1954. However, United Front could not change the set pattern of party politics in Pakistan. Military Government banned all Political parties for four years (1958-62) as Ayub Khan was against democracy and political parties. Some political movements were directed at gaining participation in national parties. Some political movements were directed at gaining participation in national system after revival of political parties Act 1962. The demand for autonomy was revived with greater force in East Pakistan after the presidential election and war of 1965. Moderate leadership of Awami League was replaced by Shaikh Mujibur Rahman in 1966 who presented six-point. This development impacted the party politics in Pakistan immensely. The uprising of people illustrated the polarization and radicalization in East Pakistan. It also generated the structural and social changes in terms of political development. It was the inability of the system that introduced by Ayub government that did not articulated and aggregated the interests of East Bengal, particularly. In this perspective, the deteriorated political situation in East Pakistan could not handle by the Yahya Government. Resultantly, Awami League succeeded to separate East Pakistan from rest of Pakistan 1971.

**Keywords:** Party Politics, Constitution, Economic Grievance, Role of Dictatorship.

## **STEMS182: A SOCIOLOGICAL STUDY OF SUBJUGATION FACED BY RELIGIOUS MINORITIES IN SOUTHERN PUNJAB, PAKISTAN**

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Minorities are basically defined as ascribed status such as gender, race, ethnic, and religious background. The objectives of the current study were to determine the issues of religious minorities in Southern Punjab; to know the minorities' social condition and to examine the government role regarding the protection of minorities. The study was conducted in two districts Rahim Yar Khan and Multan of Southern Punjab, Pakistan. Data were collected from 200 minority residents of districts Rahim Yar Khan and Multan through structured interview schedule. Data were collected through purposive sampling technique. Collected data were analyzed by using Statistical Package for Social Science (SPSS) 23.0 version. Data descriptive and inferential was analyzed included frequency, percentage, standard deviation. It was found that majority 121 (60.5) of the respondents did not have the property; majority 162 (81.0) of the respondents said that they cannot openly perform their worship; majority 152 (76.0) of the respondents said that government is not serious in resolving their issues; majority 183 (91.5) of the respondents were agreed that they did not face discrimination in medical care; majority 183 (91.5) of the respondents feel comfortable

during travelling; majority 120 (60.0) of the respondent did agree that they did not face work place discrimination; majority 106(53.0) of the respondents said that they face obstacle to get admission in the school/collage/university; majority 149 (74.5) of the respondents were not the member of any political party. It is suggested that government of Pakistan should have to protect the rights of minorities in the light of the speeches of Quaid-e-Azam. The responsible institutions should ensure the implementation of the previous laws that guaranteed the safety of the minorities and make the new laws where needed to tackle the issues of subjugation of minorities.

**Keywords:** Issues, Religious Minorities, rights, laws, South Punjab, Pakistan

**STEMS183: DEMOCRACY VS. DICTATORSHIP;  
COMPARATIVE ANALYSIS OF ZULFIQAR ALI BHUTTO  
AND GENERAL ZIA’S REGIME**

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Democracy assures the normative commitment and equal participation of all the citizens in political process while dictatorship can be shortly described as might is right, one-man power. Dictatorship often claim as progressive era where economic and social development boost up. All the elements of society and politics are effected under both the political systems. Pakistan has been facing both of the phases time to time since inception; it is eye witness of aforesaid systems and their consequences in society. The peace of research explored the impacts of both the political systems on each element and organization contributing to the political system such as provision of fundamental rights, privileges to the masses, structure and working of legislature. Comparative analysis of Zulfiqar Ali Bhutto and General Zia-ul-Haq’s remiges were presented in the paper. By using the primary as well as secondary

sources the paper tried to explore the difference of working and impact of both the political systems on society. By using the descriptive and analytical measures, it was find out that democracy is a second name of freedom and liberty that guarantee satisfaction and peace in society; whether dictatorship provide best facilities but cannot guarantee satisfaction and peace for long run.

### **STEMS184: ETHNO-MEDICINAL USE OF CHOLISTAN DESERT MEDICINAL PLANTS HAVING CYTOTOXIC ACTIVITY, BAHAWALPUR REGION, PAKISTAN- A REVIEW**

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Cancer is a global battle and defined as an uncontrolled division of cells with an inability to stop. It is the second leading cause of mortality and mobility. Cancer can be controlled therapeutically with the help of radiotherapy and chemotherapy. However, it damages the normal cells of the body. More than 1000 medicinal plants are identified with significant cytotoxic properties and they are the credible source of cancer therapy. Natural plants can consider a potential source to act as a chemotherapeutic agent. Cholistan desert is blessed with countless varieties of plant species with different therapeutic activities. Based on ethnomedicinal information, there are some plants in the Cholistan desert of Bahawalpur region with marvelous cytotoxic activities and proven to be effective in the indigenous treatment of cancer. Aim and Objective: This study reviewed the knowledge of medicinal plants in the Cholistan desert of Bahawalpur having anticancer or cytotoxic agents. Methodology: Different articles regarding cytotoxic activity of different medicinal plants published in well reputed journals were studied in detail and findings of these articles were compiled and included in this review. Research Outcomes: Many medicinal plants from Cholistan desert having cytotoxic activity belong to different families have been reported from their traditional use. Future

**Scope:** The data compiled in this review is hoped to help the researchers in evaluating the anticancer potential of medicinal plants and obtain cytotoxic agents with anti-cancer properties that will revolutionize cancer treatment and produce safe and cost-effective drugs.

**Keywords:** Cytotoxicity, Anti-cancer agent, cytotoxic activity, cytotoxic properties, Cancer, Natural plants, medicinal plants, Cholistan desert, Bahawalpur.

### **STEMS185: SYNTHESIS AND EVALUATION OF POLYMER-DRUG CONJUGATES FOR COLON DRUG DELIVERY**

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**Introduction:** Chronic inflammatory bowel diseases (IBDS) are still waiting for better, improved and innovative therapeutic treatments, which can overcome the limits of the current approaches. Since IBDS affect mainly the lower tract of the intestine, a localized therapy in the colon tract can solve most of the problems caused by systemic or poor selective therapies. Polymeric prodrugs are novel techniques for advance drug delivery systems that can reach specific colon delivery, thus guaranteeing active agent release only at the site of action. **Research Objectives:** This approach can meet two objectives at the same time, first of all, the drug will not affect healthy tissue and second a lower drug dose may be needed due to most of the administered drug will reach the target site. The aim of the present study was to develop a colon targeted delivery system for 5-aminosalicylic acid (5-ASA), a well known first choice agent against IBDS using polymeric prodrug formulation. **Methodology and Findings:** Hydroxypropyl cellulose (HPC, MW 80,000) functionalized with chloroacetate groups was exploited as a macromolecular carrier. It was obtained by homogenous

reaction of HPC with chloroacetyl chloride in dried dichloromethane by using pyridine as a catalyst. The coupling of 5-ASA to HPC functionalized with chloroacetate groups was carried out in a homogenous reaction between chloroacetylated HPC and sodium salt of 5-ASA. Research Outcomes: The structures of chloroacetylated HPC, 5-aminosalicylate and HPC-5-ASA conjugates were determined by means of FTIR and <sup>1</sup>HNMR. Future Scope: In vitro study of HPC-5-ASA conjugates will be conducted for the treatment of Chronic inflammatory bowel diseases.

**Keywords:** Polymer-drug Conjugates, IBD, 5-Aminosalicylic Acid, Hydroxypropyl cellulose

### **STEMS186: MICROEMULGEL LOADED WITH NATURAL PLANT EXTRACT (CARTHAMUS TINCTORIUS): A PROMISING APPROACH TOWARDS ADVANCEMENTS IN COSMETOLOGY**

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The use of plants extracts is a practice used in traditional medicine and the use of natural compounds and plant extracts has been re-discovered since last few years. The microemulgels loaded with natural plant extracts can open up new horizons in cosmetics. The present study was aimed to develop a stable microemulgel loaded with the plant extract of *Carthamus tinctorius*. For this purpose, seeds of plant were purchased from the market, soaked for seventy-two hours in different solvents (i.e. methanol, ethanol), filtered, concentrated through rotary evaporator and characterized by tyrosinase inhibition activity, phenolic and flavonoid contents, phytochemical screening, DPPH (1, 1-diphenyl-2-picrylhydrazyl) for the selection of best extract. Then a stable microemulgel was developed by choosing the most suitable available chemicals including oils, surfactants and co-surfactants, and

was loaded with the selected plant extract of *Carthamus tinctorius*. All stability parameters including globule size of the microemulsion prior to incorporate in gel; and then phase separation, pH and viscosity changes of microemulgel over the period of three months in-vitro study. The stable microemulgel was successfully developed and it could be explored further for in-vivo cosmeceutical studies.

**Keywords:** Microemulgels, *Carthamus tinctorius*, Natural/ Herbal extract.

### **STEMS187: REVIEW ON WOUND HEALING ACTIVITY OF SOME MEDICINAL PLANTS COMMONLY USED IN FOLK HERBAL MEDICINE FOR WOUNDS, BAHAWALPUR REGION, PAKISTAN**

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Bahawalpur region of Pakistan has been blessed with a diverse flora that has been the source of food, shelter and medication for its inhabitants long before the modern era. There are many examples where plants have been used to heal wounds by natives. Wounds are injuries that break the skin or other body tissues. Cuts, punctured skin and scratches all are considered wounds. They can be caused by accidents, even surgeries and stiches can result in wounds. Serious or not, it is very important to tend to wound otherwise infections can lead to other complications. Every human is prone to wounds irrespective of the race, gender, age and lifestyle. Aims and Objectives: This review is aimed to analyze the ethnobotanical knowledge and pharmacological evaluation of medicinal plants used to treat wounds by the natives of Bahawalpur region, Pakistan. Methodology: For this review all the available data on the wound healing from plants was thoroughly

searched and compiled from several research articles published in reliable journals, using reliable search engines. The data was analyzed and tabulated. Many medicinal plants of Bahawalpur region have not been validated for their traditional wound healing use. Future Scope: This review is hoped to provide scope for researchers aiming to evaluate their traditional wound healing use and develop herbal drugs for wound healing that are cost effective and have limited side effects.

**Keywords:** Wound healing, Medicinal plants, folk Medicinal use, herbal medicine, Bahawalpur.

**STEMS188: EUPHORBIA NIVULIA BUCH.–HAM: A POTENTIAL PHYTOTOXIC AND INSECTICIDAL AGENT**

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Growth and development of many plants and animals may be affected by an array of phytochemicals that have the potential to be used as biological control agents against weeds as well as insects. In current study, different concentrations of crude, hexane, chloroform, butanol and water extract of *Euphorbia nivulia* Buch.- Ham., an endemic plant of Cholistan Desert of Bahawalpur, Pakistan, were used to investigate the phytotoxic and insecticidal capacities against duckweed, *Lemna minor* (L.), and the dusky cotton bug, *Oxycarenus hyalinipennis* (Costa). In phytotoxicity assay, 1000 µg/mL of the crude, chloroform, and butanol extract showed 63.1%, 100%, and 27.1% of growth inhibition on duckweed, respectively. However, no phytotoxic lethality could be found at 10 and 100 µg/mL of all extracts. In insecticidal activity, the highest response was found at 15% of chloroform extract that could cause 87% mortality of *O. hyalinipennis*. Paraquat was the standard drug used for phytotoxicity, while commercially available insecticide solution, Oberon was the standard drug used for insecticidal activity. The findings of the study reveal that higher concentrations of

chloroform extract of *E.nivulia* showed significant phytotoxic and insecticidal capacities compared to control, and might have high potential to be developed as a phytotoxic and insecticidal agent.

**Keywords:** *Euphorbia nivulia*, phytotoxicity, insecticidal activity, *Lemna minor*, *Oxycarenus hyalinipennis*

### **STEMS189: MICROBIAL BIOTRANSFORMATION STUDIES OF STANZOLOL BY USING CUNNINGHAMELLA ECHINULATA**

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For centuries microbial biotransformation has proved a useful tool in alleviating production of different chemicals used in pharmaceuticals, agrochemicals, foods and other industries. Biotransformation studies have been extensively applied to investigate the metabolism of compounds (leads, lead candidates, etc.) using animal models. Microorganisms can conveniently afford drugs, difficult to obtain via chemical synthesis. In this study microbial biotransformation of stanozolol, the androgenic anabolic steroid used in the treatment of hereditary angioedema, Raynaud's phenomenon, urticaria, lipodermatosclerosis and cryofibrinogenemia, was reported by using *Cunninghamella echinulata*. The incubation of Stanozolol (1) with *Cunninghamella echinulata* yielded four known metabolites, viz., 3',17 $\beta$ -dihydroxy-17 $\alpha$ -methyl-5 $\alpha$ -androst-2-eno(3,2-c)-pyrazole (3), 4 $\beta$ ,17 $\beta$ - dihydroxy-17 $\alpha$ -methyl-5 $\alpha$ -androst-2-eno(3,2-c)-pyrazole (2), 6 $\alpha$ ,17 $\beta$ -dihydroxy-17 $\alpha$ -methyl- 5 $\alpha$ -androst-2-eno(3,2-c)-pyrazole (5) and 16 $\beta$ ,17 $\beta$ -dihydroxy-17 $\alpha$ -methyl-5 $\alpha$ -androst-2- eno(3,2-c)-pyrazole (4). All the four compounds were subjected to structural elucidation by using different spectroscopic techniques including EI-MS, IR, <sup>1</sup>HNMR

and <sup>13</sup>CNMR. Further in silico, in vitro and in vivo studies are required to explore the pharmacological profile of the isolated metabolites.

**Keywords:** Biotransformation, *Cunninghamella echinulata*, Stanozolol

## **STEMS190: NANOPARTICULATE CHITOSAN BASED MICELLES FOR TARGETING DOXORUBICIN TO CANCER CELLS**

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**Objective:** To design nanoparticles for targeted delivery of anticancer drug doxorubicin. **Methodology:** Chitosan, a biocompatible polymer, was used for the development of micelles for delivery of doxorubicin along with Pluronic F127. Chitosan-Pluronic F127 micelles were functionalized by folic acid conjugation to achieve targeting to tumors over-expressing folate receptors. Micelles were characterized for size, zeta potential and Critical Micelle Concentration (CMC) by Dynamic Light Scattering (DLS) method. Morphology was studied using Transmission Electron Microscopy (TEM) and Field Emission Scanning Electron Microscopy (FESEM). **Findings & Outcomes:** Chitosan-Pluronic micelles were comparably more effective than free doxorubicin in cytotoxicity evaluations. Further evaluation in a doxorubicin resistant cell line indicated that free doxorubicin had little or no effect on these cells, whereas doxorubicin loaded micelles were 4-fold more effective than free doxorubicin. Drug uptake studies show

that folate functionalized micelles had a better uptake compared to free doxorubicin into SKOV3 cells.

Future Scope: Folate conjugated Chitosan-Pluronic based micelles have a great potential as targeted nano drug delivery system.

**Keywords:** nanoparticles; micelles; doxorubicin; chitosan; targeted delivery.

## **STEMS191: IN VIVO EVALUATION OF SULFHYDRYL DERIVATIVES OF $\beta$ -CYCLODEXTRINS AS MUCOADHESIVE INTRA-VESICAL DRUG DELIVERY SYSTEMS**

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The study was designed to synthesize and characterize sulfhydryl derivatives of  $\beta$ -cyclodextrin ( $\beta$ -CD) derivatives as mucus adhering excipients for intra-vesical drug delivery. Sodium periodate (NaIO<sub>4</sub>) was used to oxidize  $\beta$ -CD and subsequently cysteamine was covalently attached to carbonyl groups of oxidized  $\beta$ -CD via reductive amination to produce sulfhydryl derivative of  $\beta$ -CD. L-cysteine-2-mercaptanpicotinic acid conjugate (Cys-MNA) was covalently attached to carbonyl groups of oxidized  $\beta$ -CD to produce pre-activated  $\beta$ -CD having enhance stability against oxidation at higher pH. Sulfhydryl and pre-activated  $\beta$ -CD derivatives were quantitatively assayed for the attached sulfhydryl groups and MNA groups, respectively. Cell viability and tolerability was evaluated via resazurin assay and via red blood cells (RBC) lysis assay, respectively. Mucoadhesive properties were evaluated on goat bladder mucosa. Trimethoprim (TMP) was encapsulated into sulfhydryl attached and pre-activated  $\beta$ -CD derivatives and the dissolution behavior was evaluated in vitro.

Sulfhydryl groups attached to  $\beta$ -CD derivatives  $\beta$ -CD-SH780 and  $\beta$ -CD-SH1426 were  $780 \pm 68 \mu\text{mol/g}$  and  $1426 \pm 66 \mu\text{mol/g}$ , respectively. For pre-activated  $\beta$ -CD derivatives,  $\beta$ -CD-MNA3609 and  $\beta$ -CD-MNA4285 number of attached MNA groups were  $3609 \pm 19 \mu\text{mol/g}$  and  $4285 \pm 43 \mu\text{mol/g}$ , respectively. Sulfhydryl and pre-activated derivatives of  $\beta$ -CD did not show adverse effects to cells determined via resazurin and RBC lysis assays. Mucoadhesion on bladder mucosa was significantly improved for sulfhydryl and pre-activated  $\beta$ -CD derivatives. Sulfhydryl  $\beta$ -CD-SH1426 showed 15-fold and pre-activated  $\beta$ -CD-MNA4285 showed 25-fold improved mucoadhesion compared to unmodified  $\beta$ -CD. Further, pre-activated  $\beta$ -CD-MNA4285 showed 2-fold enhanced dissolution of encapsulated TMP compared to free TMP over 3 h. The study showed that pre-activated  $\beta$ -CD could be an excipient of the choice for the formulations of mucoadhesive intra-vesical drug delivery systems.

**Keywords:** pre-activated cyclodextrin, intra-vesical drug delivery, mucoadhesion, bladder, trimethoprim

## **STEMS192: FORMULATION AND CHARACTERIZATION OF RAPID DISSOLVING ORAL FILM OF PIROXICAM AND CLOVE OIL**

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The present study was aimed to develop fast dissolving oral film of Piroxicam beta-cyclodextrin ( $\beta$ -CD) and clove oil with analgesic and anti-inflammatory activity in conditions such as arthritis, toothache, postoperative pain, and dysmenorrhea. Patients who have noncompliance with conventional dosage forms suffer from dysphagia, choking, and other such problems. The primary purpose of this study to

overcome such issues that are related to other conventional dosage forms and to provide systemic drug delivery to improve the bioavailability, to bypass hepatic metabolism through pre gastric absorption of the drug in the oral cavity. This combination therapy provides a synergetic effect with maximum therapeutic efficacy and minimum side effects. The fast-dissolving film was prepared by using the simple solvent casting method. After formulation, the films were characterized for physical and chemical evaluation. Different evaluation tests such as tensile strength, percentage elongation, dissolution test, weight variation test, FTIR, and content uniformity test were performed. No physicochemical interaction was found between drugs and polymers. From all the formulations DF4 and DF5, the drug release pattern was rapid. This prepared film will have improved bioavailability and more patient compliance. In conclusion, the ready orodispersible film (ODF) may increase both drugs' safety and therapeutic efficacy by giving a synergistic effect in relieving pain.

**Keywords:** orodispersible film; beta-cyclodextrin;

### **STEMS193: CYTOTOXIC AND ANTIVIRAL POTENTIALS OF EUPHORBIA MILII VAR. SPLENDENS LEAF AGAINST PESTE DES PETITS RUMINANT VIRUS**

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Research objective: To determine the cytotoxic and antiviral potentials of *Euphorbia milii* var. *splendens* leaf against Peste des petits ruminants virus (PPRV). Methodology: The methanol extract, as well as n-hexane, chloroform, ethyl acetate, and n-butanol fractions of *E. milii* leaves were screened for cytotoxic and antiviral activities against PPRV

using Vero cell line and 3-(4,5-dimethylthiazol-2-yl)-2, diphenyltetrazolium bromide (MTT) assay. Results: Non-cytotoxic concentrations with cell survival rate (CSP) greater than 50 % were considered virucidal. Methanol extract and fractions produced significant ( $p < 0.05$ ) effects at all test concentrations against PPRV. The 50 % cytotoxic concentration (CC50) calculated was  $\leq 25 \mu\text{g/mL}$  for extract and fractions. In antiviral assay, ethyl acetate, n-hexane, and n-butanol fractions at all test concentrations ranging from 1.56 - 800  $\mu\text{g/mL}$  were non-virucidal; even at their non-cytotoxic concentrations these fractions did not show antiviral activities. However, the methanol extract and its chloroform fractions showed significant ( $p < 0.05$ ) virucidal potential. Future scope: The results suggest that further isolation of antiviral constituents from the fractions may open new horizons for the development of new antiviral agents.

**Keywords:** Antiviral, Cytotoxic, Euphorbia milii, Vero cell, Peste des petits ruminant's virus

## **STEMS194: FORMULATION AND IN-VITRO/EX-VIVO EVALUATION OF VORICONAZOLE FORMULATED WITH SODIUM DEOXYCHOLATE SULPHATE FOR INHALATION**

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Voriconazole (VRC) is a broad spectrum antifungal as well as anti-leishmanial drug from BCS class II. Various attempts have been made to enhance the solubility of VRC but significant success hasn't been possible. Solubility and bioavailability of hydrophobic drug can be increased by incorporating them in the carrier system which not only is simple in manufacturing but also stable for the longer duration. Sodium deoxycholate sulphate (SDCS), a carrier to be used here with VRC is our molecule of interest. It has been found less toxic to red

blood cells and non-toxic to alveolar, bronchoepithelial as well as the alveolar macrophage cell lines as compared to VRC. It formed a more stable reconstituted formulation. The mass median aerodynamic diameter of VRC-SDCS dry powder was suitable for drug delivery to the lungs. This study presents micellization of VRC with sodium deoxycholate sulphate SDCS as small lipid molecule at different molar ratios. VRC-SDCS micelles were stable after freeze drying and presented zeta potential values between -26.4 to -41.3 mV and particle size in the range of 66.2 to 201.9 nm, upon rehydration in water. A significant reduction was observed in MIC and MFC values for VRC-SDCS formulations as compared to VRC. The MMAD of all formulations was 1.71 to 2.05 with high FPF ranging 76 to 88 % and GSD 2.13 to 3.57 showing particle size appropriate for nebulizers and uniform particle distribution. All the formulations resulted in reduced toxicity to the respiratory cell lines even up to 8 µg/mL. IC<sub>50</sub> was also significantly reduced against promastigote forms of *Leishmania tropica*. The formulations were phagocytized by macrophage cells as evident in confocal microscopy. It is concluded that the VRC-SDCS complex based micellar system is better than conventional liposomal formulation in context of safety, stability, preventing drug release and may find future implications in designing renal compatible and pulmonary drug delivery systems of VRC.

**Key Words:** Voriconazole, Sodium deoxycholate sulphate, Micelles, Inhalation, Solubility, Cell Lines

### **STEMS195: CARDIOPROTECTIVE AND HYPOTENSIVE ACTIVITIES OF NEMESIA STRUMOSA BENTH IN RODENTS**

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*Nemesia strumosa* benth. is ornamental plant belonging to Scrophulariaceae family in southern Africa. This current study was conducted for elucidating In-vivo and In-vitro cardioprotective and antihypertensive effects of *Nemesia strumosa* plant. During In-vitro studies, *Nemesia strumosa* Cr. and its fractions (Aqueous and DCM) were used on Endothelium dependent Rat aorta and paired atria for checking of cardio-relaxant and cardiac depressant effects. During In-vivo studies, Effect of *Nemesia strumosa* Cr. and its fractions on Mean arterial Blood pressure was measured invasively in Anaesthetized Rats connected through Pressure and Force transducers with Power Lab Data Acquisition System. *Ns. Cr* and its fractions (Aq and DCM) showed relaxation on Phenylephrine (1 $\mu$ M) and High K<sup>+</sup> (80mM)-generated vasoconstriction in Rat aorta and Cardio depressant response on Rat paired Atrium by Calcium channel blocking mechanism. Moreover, Isoproterenol was used during in vivo experiments of AMI and LVH for initiation of Cardiac hypertrophy and heart tissue damage. *Ns.Cr.* showed hemodynamically and histopathologically excellent results in LVH and AMI may be attributed to sinapic acid, caffeic acid and P-caumaric acid as detected by High Performance Liquid Chromatography (HPLC). *Ns. Cr* showing decrease levels of Angiotensin converting enzyme II (ACE II) and Renin conc. and increase level of Nitric oxide and cGMP with no necrosis, fibrosis, and inflammation in heart tissue. Decrease in cell size, diameter and surface area of heart tissue was also seen. After Acute Myocardial Infarction study, *Ns.Cr.* was showing with decrease in % infarct size. There is decrease in LDH, CK, CK-MB levels and no fibrosis, edematous cells were found in histopathological lab findings. Oral Acute Toxicity (14 days) and Oral Chronic Toxicity (90 days) studies were performed for noticing toxic sign and symptoms and also for determination of Lethal Dose (LD50) of *Nemesia strumosa* Cr. Hemodynamical findings were seen with normal CBCs, Liver function test, Renal function test and Serum electrolytes levels. No effects at low doses but necrosis and inflammation at high doses were seen in Chronic toxicity study in

histopathology. In-vitro and in-vivo experimental studies showed that *Nemesia strumosa* may have antihypertensive, vasodilatation and cardio protective properties providing scientific basis of its use in CVDs in future.

### **STEMS196: A SCIENTIFIC PERSPECTIVE TO STUDY THE MULTIPLE THERAPEUTIC PROPENSITIES OF A MULTIFUNCTIONAL MEDICINAL PLANT, ANAGALLIS ARVENSIS L**

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*Anagallis arvensis* L. has been used in folklore as natural remedy for wound healing, edema, epilepsy, diuretic, diaphoretic, expectorant, rheumatism and mental illness. The present research is aimed to explore the biochemical properties and toxicity potential of methanol (MeOH) and dichloromethane (DCM) extracts of aerial and root parts of *A. arvensis*. Total bioactive contents were determined by spectrophotometry, and the secondary metabolites were identified by UHPLC-MS analysis. For biological evaluation, DPPH, ABTS, FRAP, CUPRAC, phosphomolybdenum, and metal chelating assays were employed to assess antioxidant activity. Inhibitory potential against key enzymes including  $\alpha$ -glucosidase, urease, lipoxygenase (LOX), acetylcholinesterase (AChE), and butyrylcholinesterase (BChE) were also assessed. Moreover, cytotoxicity was tested using MTT assay against five different carcinoma cell lines (MDA-MB-231, MCF-7, CaSki, DU-145, and SW-480 cells). The methanolic extracts showed highest phenolic and flavonoid content and potent antioxidant activities. All the extracts were cytotoxic towards tested cancer cells

with IC<sub>50</sub> values ranging from 12.57-294.5 µg/mL and conferred a comparatively strong inhibitory potential against α-glucosidase, while aerial extracts were also considerably active against BChE, LOX and root extracts against urease. UHPLC-MS analysis showed the existence of well-known phenolics, flavonoids, and saponins, including methylgallate, quercetin, lanceoletin, and balanitesin, amongst others. This study showed that the *A. arvensis* extracts possess remarkable antioxidant, enzyme inhibition and varying cytotoxic potential which warrants further investigations geared concerning the discovery of novel phyto-pharmaceutical products.

**Keywords:** *Anagallis arvensis*; phytochemicals; enzyme inhibition, cytotoxicity

## **STEMS197: MICROBIAL BIOTRANSFORMATION STUDIES OF VERAPAMIL**

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Many studies were undertaken to validate the use of microbial biotransformation systems for drugs metabolism. The biotransformation of many antihypertensive drugs e.g Propranolol, Metoprolol had been performed by using the microbes as a vector of biotransformation. This research was carried out on the microbial biotransformation of the antihypertensive, antiarrhythmic drug Verapamil that belongs to the non-dihydropyridine class of calcium channel blockers. The biotransformation of Verapamil was performed by using the fungus *Aspergillus niger* as a vector of biotransformation. Screening experiment performed with TLC analysis at the interval of 3 and 12 days and showed positive results after 12 days. Then the

biotransformation reaction was scaled up to have reasonable quantity of metabolites. Extract is then led to fractionation by using solvents of different polarity and ultimately column chromatography technique is used to separate the potential metabolites. Four compounds were obtained which are supposed to be (i) Nor-Verapamil, (ii) Di-demethyl-Verapamil, (iii) Kojic acid and (iv) Bis (2-ethylhexyl) phthalate. Structure elucidation of these compounds was done by using modern spectroscopic techniques e.g. <sup>1</sup>HNMR, <sup>13</sup>CNMR. HMBC, HSQC, COSY, NOESY and Mass Spectroscopy.

**Keywords:** Verapamil, antiarrhythmic, TLC, Spectroscopic techniques.

### **STEMS198: SYNTHESIS OF POLYMER DRUG CONJUGATES USING NATURAL AND SYNTHETIC POLYMERS: A REVIEW**

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Polymers are the main thing to improve drug delivery at the site of action. Polymers are used as stabilizers, taste-masking agents, and protective agents. Polymers can also change the flow properties. Natural or synthetic polymers combine with the drug then the active agent releases from the drug in a controlled manner. There are different classes of polymer therapeutics like polymer-drug conjugate, polymer-protein conjugates, dendrimers, and polymeric nanoparticles. Polymer drug conjugates are a novel class of nano-carriers for drug delivery in which polymers attached with drugs by covalent bonding and consist of three major components; water soluble backbone, linker, and targeting moiety. Polymer drug conjugates improve the solubility of the hydrophobic drugs by enhancing their aqueous solubility. Polymer drug conjugates enhance the permeability of tumor vasculature which is

known as Enhanced Permeability and Retention (EPR). Polymer drug conjugates are helpful in prolongation of the plasma half-life. Aim and Objective: The objective of this study is to review the natural or synthetic polymers used in the synthesis of polymer drug conjugates. Methodology: Different articles regarding polymer drug conjugates published in well reputed journals were studied in details and findings of these articles were compiled and included in this review. Research Outcomes: The outcome of this review demonstrated the advantages and disadvantages of these polymers. Moreover, it also helps us to identify the type of natural and synthetic polymers which is best for polymer drug conjugation. Future scope: This review is helpful for the researchers to design the polymer drug conjugate. Additionally, it makes easier for researchers to select the best polymer for polymer drug conjugates.

**Keywords:** Polymers, Natural polymers, Synthetic polymers, Polymer Drug Conjugates, Drug Conjugates

### **STEMS199: ENHANCED ANTI-FUNGAL AND ANTI-LEISHMANIAL ACTIVITY OF TRANSETHOSOMAL GEL OF VORICONAZOLE**

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Voriconazole (VRCZ) is a broad-spectrum antifungal agent. It has also activity against leishmania species. It is classified as BCS class II drug with low solubility. Many attempts have been made to enhance solubility but little success was achieved due to less control, preliminary instant release and less stability which ultimately increase the complications of the dosage form. The aim of the present study was to developed, characterize and evaluate transethosomes (TELS) of

VRCZ which were further developed as gel formulation. TELs were prepared by hot method, using phospholipid as vesicles former, propylene glycol as permeation enhancer where span 60 and tween 80 were used as surfactant. FTIR studies confirmed that there was no interaction found among the ingredients. SEM of optimized formulation showed spherical shaped vesicles. The drug content of transethosomal gel in optimized formulation was 96.15 % and pH was in the range of 6-7 indicated that it is suitable for topical application. The optimized sample contained drug entrapment efficiency of 82 %, particle size 328.2 nm, zeta potential -26.5 mV with PDI of 0.45. The rheology study of gels showed non-linear behavior towards viscosity and shear rate and follow non-Newtonian behavior. In-vitro and ex-vivo evaluation of topical formulation of transethosomal gels were performed. It achieved a sustained drug release up to 96 % after 12 h of the study. The drug release kinetic obeys Higuchi model ( $R^2 = 0.997$ ) with Fickian diffusion mechanism. VRCZ loaded TELs and transethosomal gel showed increased skin permeability and antifungal activity against *C. albicans*, *Aspergillus flavus*, *Aspergillus fumigatus* and *leishmania denovani* as compared to control. The result indicates the development of topical VRCZ loaded transethosomal formulation serve as alternative route for drug delivery of VRCZ with enhanced activity.

**Keywords:** Voriconazole, Fungal infection, Leishmaniasis, Transethosomes, Phospholipid, Transethosomal gel.

## **STEMS200: CRTH2 ANTAGONIST, CT-133, EFFECTIVELY ALLEVIATES CIGARETTE SMOKE-INDUCED ACUTE LUNG INJURY**

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**Aims:** Acute lung injury (ALI) and acute respiratory distress syndrome (ARDS), characterized by overwhelming lung inflammation, are associated with high mortality. Cigarette smoke (CS) is one of the major causes of ALI/ARDS. Since high expression of prostaglandin (PG) D<sub>2</sub> has been observed in CS-induced lung injury. Currently, no effective pharmacological therapies are available to treat ALI, and supportive therapies remain the mainstay of treatment. Therefore, we investigated the protective effect of CT-133, a newly discovered selective CRTH2 antagonist, on CS-induced ALI in vivo and in vitro. **Main methods:** CT-133 (10 and 30 mg/kg), dexamethasone (1 mg/kg) and normal saline were intratracheally administered 1 hr prior to whole-body CS-exposure for seven consecutive days to study the key characteristics of ALI. Subsequently, CSE (4%)- and PGD<sub>2</sub>-stimulated RAW 264.7 macrophages were used to evaluate the protective effect of CT-133. **Key findings:** CT-133 remarkably attenuated infiltration of inflammatory cells, neutrophils, and macrophages in the BALF, albumin contents, expression of IL-1 $\beta$ , IL-6, TNF- $\alpha$  and KC, lung myeloperoxidase (MPO) activity and lung histopathological alterations caused by CS exposure in mice. Moreover, CT-133 not only reversed the uncontrolled secretion of IL-1 $\beta$ , IL-6, TNF- $\alpha$  and KC from CSE- and PGD<sub>2</sub>-stimulated RAW 264.7 macrophages but also augmented IL-10 production in both in vivo and in vitro studies. Additionally, CT-133 alleviated in vitro neutrophil migration chemoattracted by PGD<sub>2</sub>. **Significance:** Our results provide the first evidence that targeting CRTH2 could be a new potential therapeutic option to treat CS-induced ALI.

**Keywords:** Acute Lung Injury, CT-133, Cigarette Smoke, Inflammatory Cells

## **STEMS201: STUDY OF ANTIVIRAL POTENTIAL OF OCIMUM BASILICUM PLANT EXTRACT AGAINST POULTRY VIRUSES**

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Herbal medicines owing to their role in both modern and customary medicines are being used over thousands of years for the sustenance of human healthiness. Use of medicinal plants is associated with the treatment of several infectious and non-infectious diseases especially in the developing countries. Following study also covers the in vitro antiviral activity of different parts of *Ocimum basilicum* against common poultry viruses. Stem and leaves of the plant were collected, authenticated, dried and extraction was performed by maceration process with 80% ethanol. For the assessment of antiviral activity equal quantity of plant extracts and live viruses were mixed and propagated for 7-11 days in embryonated eggs with suitable controls. After the passage of 48 hours the allantoic fluid was harvested and hemagglutination test (HA) was done for New Castle Disease virus (NDV) and Infectious Bronchitis Virus (IBV). Results of the study revealed that HA titers of *Ocimum basilicum* stem and leaves for NDV were 4 and 8 respectively, while for IBV it were 0 and 2, respectively. This shows that the plant extracts are effective for both viruses but they are more effective against IBV in comparison to NDV even at lower concentrations which open up new horizons for the use of medicinal plants against poultry viruses.

**Keywords:** Herbal medicines, *Ocimum basilicum*, New Castle Disease virus (NDV) and Infectious Bronchitis Virus (IBV).

## **STEMS202: NON-INVASIVE BIOPHYSICAL INVESTIGATIONS OF BUTEA SUPERBA ROXB. LOADED ETHOSOMAL GEL**

Mehwish andleeb

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**Background:** Plant derived antioxidants, polyphenols and flavonoids have anti aging, anti inflammatory and carcinogenic potential but are rarely used in dermatology. **Aims:** Present study aims to develop a stable ethosomal gel loaded with Butea superba Roxb. pre-concentrated flower extract developed to improve facial skin properties. **Methods:** The present investigation was aimed for assessment of its various fractions for scavenging activity, phenolic and flavonoid contents, FTIR analysis, fabrication of herbal ethosomal dispersion, optimize by size, zeta potential, polydispersity index and incorporate into gel. Organoleptic, stability and permeation studies of gel were performed and stable ethosomal gel was tested on healthy volunteers. **Results:** Results revealed that ethanolic extract showed  $85.45 \pm 0.19\%$  scavenging activity, Phenolic content  $123.87 \pm 0.21$  mg GAL/g and flavonoid content  $42.1 \pm 0.29$  mg quercetin equivalent/gts. Herbal ethosomal dispersions were prepared and based on the results of entrapment efficiency, morphology, size and zeta potential optimized formulation was formulated into gel using carbopol 943. The optimized formulation BS 9 stable homogeneous with 90% entrapment efficiency, spherical vesicle of 240nm, having 0.24 PDI and -31.1 mV zeta potential was incorporated into a stable light-yellow color gel having pH 6.4 and viscosity 4760 cps. There were significant effects invoked by ethosomal gel on dermatological associated skin parameters like erythema, melanin, elasticity, hydration and sebum as compared to placebo.

Conclusion: Hence *Butea superba* Roxb. loaded ethosomal gel can be a potential moisturizer, anti aging, anti wrinkle, anti acne agent and can effectively induce skin resurfacing.

### **STEMS203: FORMULATION AND EVALUATION OF HERBAL MICROEMULSION BASED GEL FOR TOPICAL DELIVERY**

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Antioxidants are extensively derived from plants, as they play crucial role in human life due to their free radical scavenging property. Cosmetics having plant extracts are becoming widely acceptable publicly. Microemulsion based gel containing plant extract are new approach in cosmeceuticals. The present study was aimed to successfully formulate a stable microemulsion based gel loaded with *Linum usitatissimum* seeds extract. For this purpose, seeds were collected, authenticated and extraction was performed in 80% ethanol by maceration process. Phytochemical screening for the detection of wide variety of primary and secondary metabolites was done by using standard methods which revealed the presence of tannins, poly phenols and flavonoids. Antioxidant activity and tyrosinase inhibitory assay showed prominent results which make it a suitable candidate for cosmeceutical use. Then a stable microemulsion based gel was formulated by selecting the most suitable available chemicals and plant extract of *Linum usitatissimum*. The final formulation was evaluated for period of three months to check stability parameters including phase separation, pH, conductivity, rheology and globule size. Microemulsion based gel containing *Linum usitatissimum* extract was successfully formulated and could be further evaluated for in-vivo studies.

**Keywords:** Antioxidant, Microemulsion based gel, *Linum usitatissimum*, plant extract

**STEMS204: DETERMINATION OF POLYPHENOL CONTENTS AND ANTIOXIDANT ACTIVITY OF TYPHA DOMINGENSIS (AERIAL PARTS)**

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Purpose of study: To identify solvent fraction of *Typha domingensis* with highest antioxidant activity and polyphenol contents. Method: The current study comprises phytochemical and biological evaluation of *Typha domingensis* that belongs to family Typhaceae. The plant was collected from district Rahim yar khan, Pakistan. The whole plant was shade-dried and crude methanol extract was prepared. Hexane (HF), chloroform (CF) and butanol soluble fractions (BF) were prepared from crude extract. Preliminary phytochemical tests were carried out for the qualitative assay of primary and secondary metabolites. The fractions were subjected to isolation and purification of bioactive compounds by using chromatographic techniques like silica gel column chromatography and analytical or preparative thin layer chromatography. Polyphenol contents including total phenolic contents (TPCs) and total flavonoid contents (TFCs) were determined by Folin-Ciocalteu and  $AlCl_3$  method, respectively. The fractions were evaluated for antioxidant activity by four techniques including DPPH and ABTS assays. Results: Phytochemical tests showed presence of phenols, flavonoids, tannins, glycosides, steroids, terpenoids, and saponins in all fractions. Chloroform fraction showed presence of resins too. Highest TPCs ( $89 \pm 0.352$  mg GA Eq/gm dried extract) and TFCs ( $85 \pm 0.165$  mg GA Eq/gm dried extract) were observed in butanol fraction (BF) of *Typha domingensis*. The butanol fraction showed

highest radical scavenging activity ( $78.768 \pm 0.0237$  mg Trolox Eq/gm dried extract) by DPPH method. Conclusion: BF of *Typha domingensis* aerial part has potential as radical scavenger. The findings demonstrate a potential for the development of natural antioxidant compound from aerial parts of *Typha domingensis*.

**Keywords:** *Typha domingensis*, TPC, TFC, DPPH, ABTS

**STEMS205: PHYTOEXTRACTION, ENZYMATIC, NON-ENZYMATIC ANTIOXIDANTS, ANTIBACTERIAL POTENTIAL OF SOUTH AFRICAN MEDICINAL PLANT PORTULACARIA AFRA**

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The present study was designed to evaluate Phytochemical Screening, total phenolics, total flavonoid, non-enzymatic antioxidants (DPPH,FRAP,ABTS) enzymatic antioxidants (SOD,POD,CAT) and antimicrobial potential in various fractions(methanol crude, n. hexane chloroform,n.butanol) of *Portulacaria afra*. Methanolic extract of *Portulacaria afra* was prepared. From crude methanolic extract different fractions were made on the basis of increasing polarity (n.hexane, chloroform n.butanol). Crude methanolic extract ,n.hexane, chloroform n.butanol showed significant concentration of total flavonoid  $163.25 \pm 2.50$ ,  $831.58 \pm 3.81$ ,  $680.75 \pm 2.50$ ,  $196.58 \pm 6.29$  respectively. Chloroform fraction showed significant total phenolic content ( $201.94 \pm 1.21$ ). The n.butanol and Chloroform fractions showed significant antioxidant activity by DPPH, FRAP and ABTS method by giving percentage inhibition of  $70.74 \pm 3.23$ ,  $144.74 \pm 2.20$ ,  $126.22 \pm 0.64$ ,  $312.40 \pm 0.60$ ,  $420.00 \pm 38.65$ ,  $182.08 \pm 5.64$  respectively. Regarding, enzymatic antioxidants such as SOD, POD and CAT also showed the

significant behavior in the leaves and fruits portion. While undergoing phytochemical analysis for the presence of secondary metabolites, the results revealed the presence of flavonoids, tannins, alkaloids phytosterol, saponin, cardiac glycoside, quinolones, Triterpenoid was present in the aerial parts of *Portulacaria afra*. It is concluded that *Portulacaria afra* could be a potential source of antioxidant antibacterial, antifungal and anticancer lead compound. Hence it is indicated to further investigate this plant in vitro as well as in vivo for new drug discovery.

**Keywords:** Aerial Parts, *Portulacaria afra*, Methanolic Extract, Enzyme Inhibition Activities

## Research Poster Presentation Winners in 1<sup>st</sup> International STEMS conference

### 1<sup>st</sup> Position:

- ❖ FORMULATION AND EVALUATION OF HERBAL MICROEMULSION BASED GEL FOR TOPICAL DELIVERY

Authors: Rabia Tasneem<sup>1</sup>, Haji M. Shoaib Khan<sup>1\*</sup>

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- ❖ TRADITIONAL USES OF MEDICINAL PLANTS AGAINST DIFFERENT ANIMAL DISEASES

Muhammad Ahsan Shah<sup>1</sup>, Tanveer Hussain<sup>1</sup>, \*\* Fasiha Qurashi<sup>1</sup>, <sup>2</sup>Aimen Irshad<sup>1</sup>, Muhammad Bilal<sup>1</sup>, Tahir Javed<sup>1</sup>, Fariha Saif<sup>1</sup>

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### 2<sup>nd</sup> Position:

- ❖ GREEN SYNTHESIS OF CADMIUM OXIDE-DOPED SILVER NANOPARTICLES AND ITS APPLICATION IN DEGRADATION OF BRILLIANT GREEN DYE FROM INDUSTRIAL WASTEWATER

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❖ NATURAL RESOURCES OF CHOLISTAN DESERT AND THEIR CONSERVATION STRATEGIES

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**3<sup>rd</sup> Position:**

❖ STUDY OF PHOTOCATALYTIC BEHAVIOUR AND CHARACTERIZATION OF BI-DOPED/SUBSTITUTED LI-CO SPINEL FERRITES

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*“Opportunities don't happen. You create them. If everyone is moving forward together, then success takes care of itself and Collaboration allows teachers to capture each other's fund of collective intelligence”*

*Thankyou*