KINNAIRD’s 1st INTERNATIONAL CONFERENCE ON SCIENCE, TECHNOLOGY AND INNOVATION

2ND– 4TH APRIL 2019

OFFICE OF RESEARCH, INNOVATION AND COMMERCIALIZATION
KINNAIRD COLLEGE FOR WOMEN LAHORE
Kinnaird College for Women, Lahore
Office of Research, Innovation and Commercialization

“1st International Conference on Science, Technology and Innovation”

2nd- 4th April, 2019

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BOOK OF ABSTRACTS COMPILED BY MS. NOOR UL HUDA IN COLLABORATION WITH MS IRUM MALIK AND MR WAQAR AZEEM
TITLE PAGE DESIGNED BY MS ZAINAB AND MS SAIMA JABBAR
Conference Titled

“1st International Conference on Science, Technology and Innovation”

is organized by

Office of Research, Innovation and Commercialization, Kinnaird College for Women, Lahore

More than 200 papers are to be presented in 22 Technical sessions and 2 poster sessions in all three days of conference.

The opinions, findings and conclusions stated herein are those of authors and do not necessarily reflect those of Kinnaird College for Women, Lahore Pakistan
KEYNOTE TALKS
INVITED TALK 1

By
Dr. Koh Niak Wu

Founder and CEO
Cosmiqo and The Intelligent Warehouse
kohnw@cosmiqo.com

Dr Koh is the Founder and CEO of Cosmiqo and The Intelligent Warehouse. He specialises in supply chain analytics, strategy execution and operations management innovation. In 2017, he received the Supply Chain Innovation of the Year award. Dr Koh was formerly part of the Global Supply Chain and Logistics team at Dell contributing to strategy analytics. He was also in the Planning and Operations Management Group at SIMTech, A*STAR where he gained valuable insights into the evolution of industries. Additionally, Dr Koh is an Adjunct Faculty at the Singapore Management University (SMU) and Singapore University of Social Sciences (SUSS) where he shares his views and cross-industry experiences in supply chains and operations management. Due to his pedagogical methods, Dr Koh was on the SMU Dean’s Teaching Honour List for several years. He is also a Resource Person with the Asian Productivity Organisation (APO). Dr Koh codes, believes in the power of operational analytics and how it shapes business decisions. He holds a Doctor of Philosophy in Robotics from the National University of Singapore and a Bachelor of Engineering (1st class) from King’s College London.

Title of Talk
TRANSITIONING INTO A FUTURE SYSTEM

Abstract
The world we live in today is at an inflexion point and it is propelling toward new normals at a formidable rate. As a result, the future of anything has been a topic of intense discussion and it is also one that is intensely hypothesised. We each see through the lens of the most significant frame but no matter which perspective, we need to agree that technology will be disrupting entire value networks and this will chart a direction for the future.
We live in amazing times where companies with no-assets are positioned to dominate global logistics, retail, accommodation and media. Whichever the industry, we are now expected to reimagine business models for exponential change. Software is still eating the world and companies will have to restructure around different economics.
The exponential growth of synthetic intelligence has resulted in intense discussions on the future of work. It generally highlights that exponential rates of change are difficult for the human mind to comprehend and for the eye to see. Exponential curves are unique in the sense that they are mathematically self-similar at every point. What this means is that an ever-doubling curve has no flat part, no ascending part, and none of the elbow and hockey stick bends many business people are used to talking about.

This talk will provide a mental model to ease the transition into a future system.
IVNETED TALK 2

By
Dr. N. M. Butt

Preston Professor of Nano Science & Technology & Chairman
Preston Institute of Nano Science & Technology (PINSAT)

Dr. N.M. Butt has extensive experience in the field of sciences. His classical work with O'Connor established the confirmation of Waller’s theory (1923) of phonons at the Bragg diffraction peaks using diffraction of Mossbauer gamma-rays from LiF single crystals which has been extensively cited for several decades and printed in several books including those of Cambridge University Press (U.K.) and North Holland Publishers. Dr. Butt is Fellow of the Pakistan Academy of Sciences and the Islamic Academy of Sciences and has been President of a few Professional Societies of Pakistan. He is the First Joint Winner of International Kharazmi Award (KIA), Iran (1995). He was elected Hon. Member of the World Innovation Foundation (WIF).

Title of Talk
NANOTECHNOLOGY AND THE FORMAL UNDERGRADUATE DEGREE EDUCATION IN NANOTECHNOLOGY?

Abstract
Nanotechnology, the basis of which was laid down in the famous lecture “There is a plenty of Room at The Bottom” by Feynman at Caltech, California in 1959, is now very much a portent enterprise for Industrial Revolution and already has a great influence on the socio-economic fabric of our society. Apart from many benefits coming out and being promised by the applications of Nanotechnology, the question of Nano Safety and nano security need to be addressed. At the same time it is pertinent to plan the production of the Human Resource which is properly qualified and trained to be best suited to the society for getting the maximum benefits to the it. The argument is that to draw such optimum benefits from this technology we need a formal and proper education not only at the undergraduate level, the focus of the current discourse, but even at the school level so that the scientists and engineers of tomorrow who have to take the reigns of tomorrow of nanotechnology are well trained and well educated to have proper command on the tasks they are assigned to do whether in academia or in Industry. To this end already the advanced countries have designed and started teaching nanotechnology courses even at the school level. For example, the countries like USA, China, Taiwan are already laying emphasis on secondary school education and many other countries are also taking positive steps in this direction. In the present discourse the global scenario of formal nanoeducation at the undergraduate level will be discussed and the type of courses designed and developed over the last few years at the Preston Institute of Nano Science and Technology (PINSAT) of the Preston University Kohat, Islamabad Campus will be discussed. Already in 2010 when formal undergraduate teaching in nanoeducation was started at PINSAT there were only 30 Institutions across the world and in now already about 100 such institutions are having multidisciplinary degree undergraduate programs in Nanotechnology successfully being executed there. This is three fold increases in this regard in the last few years which indicate a great realisation at the world level for giving formal nanoeducation. So far 5 batches of BS(Nanoscience and Nanotechnology) degree graduates have been produced and they have won MS/PhD scholarships in China, South Africa, Hong Kong, Europe and MS admissions in Norway, Germany and Italy in variety of areas. The future trend in nanotechnology will also be discussed and to some extent the public awareness and informal nanoeducation through science Museums, mobile nano science vans, exhibitions, public lectures and such informal nenoeducation will also be discussed with a view that the society also needs to be well aware of the essential aspects of the new emerging technologies, the nanotechnology in the present case which now is globally regarded as the industrial revolution.
INVITED TALK 3

By

Prof. Dr. Muhammad Akram Kashmiri
Director QEC
Punjab Group of Colleges

He did his Ph.D. Organic Chemistry from University of East Anglia, U.K and Post Doctorate- Bio-Organic Chemistry University of Florida U.S.A. He has an extensive experience in Post Graduate Teaching and Research spanning 33 years. Currently, he is working as a Director Quality Enhancement Cell, PGC, Lahore. He is a prolific writer and authored 05 books. Further, he is an author of more than 70 papers published in international reputed impact factor journals. He had been declared as Productive Scientist of Pakistan by Ministry of Science and Technology, Government of Pakistan, Islamabad.

Title of Talk

FANTASY IN CHEMISTRY
INVITED TALK 4

By
Dr. Gerard Pichel

Team Leader/Hydraulic Design Engineer, Member of the International Society for Soil, Mechanics and Geo-technical Engineering (ISSMGE). Member of the International Association of Hydraulic Research (IAHR).

Mr. Pichel has extensive experience in the field of irrigation, dam engineering and flood control covering various regions of world. He has worked on various projects as an independent consultant and team leader. In Pakistan, he is also serving as expert consultant with Irrigation Department. (Project funded by ADB).

Title of Talk
ENVIRONMENT & CLIMATE CHANGE & ENERGY/ HOW THEY ARE CHANGING OUR FUTURE LIFESTYLE

Abstract
Climate change is changing our lifestyle and how we do business. The carbon footprint must be brought down by developing new economic/business activities and markets. Ongoing globalization may facilitate the speed of this innovative businesses and markets, e.g. through value chain approach. We are much lagging behind on this innovative path/trajectory, time is running out fast. Innovations and groundbreaking policies by governments must be accompanied by substantial budget allocations to be granted to the innovators all over the world. Due to the devastating impacts of climate change, people must be prepared for the worst: chronic water shortage and its skewed/uneven regional distribution, climate refugees, fierce competition for water rights (equity?), and most of all water/environmental pollution. Once surface water and ground water resources are polluted, its cleaning is virtually impossible, taking decades. The ongoing digital revolution may help us to manage a smooth transition to adapt to the climate change impacts and to cope with the higher frequencies of natural disasters. We witness nowadays so many natural disasters, and we wonder why? Digital revolution provides a better monitoring of natural disasters such as the depletion of surface and ground water resources. Through the powerful 5G communication system, we may learn more about our water and environment, in particular in our neighborhood or urban space. There is plenty of cash money to brace ourselves against the impacts of climate change, to control environmental degradation and to cope with climate change impacts, but unfortunately bright ideas/innovations are lacking. The first most important initiative/measure to take is that Government, Business and Society/Stakeholders (golden triangle) must sit together and establish a GRAND DESIGN for the entire society/country. Research institutes, universities etc. must play an important and proactive role in this societal GRAND DESIGN. Potential solutions must be found in these research activities/institutes for which the Government must grant the initial start-up seed money to test out some innovative solutions at laboratory/prototype scale. After a successful solution is found, another cumbersome problem emerges: how to upscale the solution at e.g. industrial scale, for the globalized markets. In the European Union for example, there is plenty of money for research on innovation, whereby transboundary grouping of many universities is recommended, so that the end benefits may accrue to the public at large in the participating member countries. In the upscaling of a sustainable innovation solution, the Government usually starts up a large-scale pilot project whereby back-up investment money is committed if success is obtained, e.g. wind energy and solar energy in the European Union member countries (do away with the pollution by coal-fired power plants as soon as possible).
INVITED TALK 5

By

Prof Dr Muhammad Ali

Vice Chancellor
Quaid-i-Azam University

Ph.D. University of Wales, UK and Post Doc from MU, Colombia USA
Vice Chancellor, Quaid-i-Azam University

Prof. Dr. Muhammad Ali has won 19 national awards on the basis of research and teaching quality including Pakistan Academy of Science Gold Medal, Best University Teacher Award and Tamgha-e-Imtiaz.

Title of Talk

EMERGING TRENDS OF BIOTECHNOLOGY IN HEALTH SCIENCES

Abstract

What is Biotechnology ?
* Health Biotechnology
* Biotechnology in the Practice of Medicine
* Emerging Trends
* Molecular Genetics
* Impact of genetic diseases

Ten leading causes of death have genetic components
* Types of genetic disorders
* Bioprocessing
* Nanobiotechnology
INVITED TALK 6

By

Dr. Jamil Anwar

Ph.D. University of Aberdeen (UK), PostDoc. University of Florida (USA). Ex-Vice Chancellor for Lahore Garrison University. He has vast experience of academic domain, he has served in leading academic institutions at the senior management positions. He is also the recipient of HEC life time achievement award He also serves as Jury Member for King Faisal International Award, Saudi Arabia.

Title of Talk

DEPLETION OF OZONE IN THE STRATOSPHERE

Abstract

The stratosphere is the second major layer of earth’s atmosphere. It lies above the troposphere and below the mesosphere. Approximately 20% of the atmosphere's mass is contained in the stratosphere. Contrast to troposphere where temperature decreases with altitude, stratosphere becomes hotter in the upper regions. This increase of temperature with altitude is a result of the absorption of the Sun's ultraviolet radiation by ozone, which lies in maximum concentration in stratosphere. The border between the troposphere and stratosphere, called tropopause, is the region where temperature inversion begins. A large number of chemical species, stable and unstable, charged and neutral exist in this part of the atmosphere. Gases like oxygen, nitrogen and its oxides, ozone, water vapours, free radicals and all sorts of ionic species are present in stratosphere. In addition to these, some long life molecular species like CFCs also climb to that height. Although temperatures are very low but energetic UV rays are also there, so a large number of reactions take place among these species. Stratospheric clouds made of frozen nitric acid also play a significant role in these reactions. Some species act as catalyst for these reactions. Depletion of ozone on the top of Antarctica in a particular part of the year in last three decades is also an outcome of these reactions. Scientists are doing their best to understand the nature of these reactions as the climatic changes on earth are highly linked with these reactions. In this talk the reactions responsible for ozone depletion and the effects of ozone depletion on climatic changes on earth shall be discussed in detail.
INVITED TALK 7

by

Dr Shahid Mahmood Baig, PhD, Sitara i Imtiaz

Professor of Human Molecular Genetics
Deputy Chief Scientist

An experienced Head of Division with a demonstrated history of working in the biotechnology industry. He has vast experience in the field of Bioinformatics, Life Sciences, Genetics, Cell Biology, and Science, Strong healthcare services professional with a Doctor of Philosophy (PhD) focused in Biochemistry and Molecular Biology. Currently he is serving as Head Health Biotechnology Division, NIBGE at National Institute for Biotechnology and Genetic Engineering.

Title of Talk
CHARACTERIZATION AND PREVENTION OF GENETIC DISEASES IN CONSANGUINEOUS PAKISTANI POPULATION IN GENOMIC ERA

Abstract

Tradition of consanguineous marriages and large family size is leading to high incidence of various genetic diseases. β-thalassemia is the most common single gene genetic disorder in this country with >6% allele frequency. Likewise, the incidence of inherited hearing impairment, visual disorders, primary microcephaly (MCPH) and other disorders is higher in this population than rest of the world. Identification of the genes underlying these disorders in the inbred Pakistani population is carried out using modern genomic techniques at Human Molecular Genetics Laboratory (HMGL), National Institute for Biotechnology and Genetic Engineering (NIBGE) to establish genetic counseling, carrier screening, prenatal diagnosis (PND) for prevention, improved treatment and personalized medicine of inherited diseases. In the framework of this program, we analyzed more than 1800 β-thalassemia families through cascade testing and offered first trimester PND through chorionic villus sampling (CVS) to carrier couples. In the last 8 years >1200 retrospective PND of β-thalassemia have been performed. A family with glioblastoma (brain tumor) was also characterized at molecular level and DNA based first trimester PND diagnoses were provided in three at risk pregnancies.

In addition, more than 3,000 large consanguineous families with various disease phenotypes [e.g. Primary microcephaly (MCPH), Neurodevelopmental disorders, hearing impairment, eye disorders, Ectodermal dysplasias, Intellectual disability, peripheral neuropathies, skeletal and limb deformities etc.] having at least two affected individuals were identified through field sampling trips in different regions of Pakistan and analyzed for identification of disease genes. In case of MCPH, we have reported CEP135, CDK6, PLK4 and KIF14 as the disease causing genes of MCPH. We identified homozygous mutations in KIF14 (NM_014875.2; c.263T>A; p.Leu88*, c.2480_2482delTTG;p.Val827del and c.4071G>A; p.Gln1357) as the likely cause in three MCPH families. Further, in a patient presenting with a severe form of primary microcephaly and short stature, we identified compound heterozygous missense mutations in KIF14 (NM_014875.2; c.2545C>G; p.His849Asp and c.3662G>T; p.Gly1221Val). Three of the five identified mutations impaired splicing and two resulted in a truncated protein. Intriguingly, Kif14 knockout mice also showed primary microcephaly. Human kinesin-like protein KIF14, a microtubule motor protein, localizes at the midbody to finalize cytokinesis by interacting with CRIK. We found impaired localization of both KIF14 and CRIK at the midbody in patient-derived fibroblasts. Further, we observed a large number of binucleated and apoptotic cells — signs of failed cytokinesis that we also observed in experimentally KIF14-depleted cells. Our data corroborate the role of an impaired cytokinesis for the etiology of primary and syndromic microcephaly as has been proposed by recent findings on CIT mutations. A number of novel disease loci, genes and mutations have been identified by HMGL for various monogenic disorders in collaboration with research groups in Europe, US and China. The gene hunting for genetic diseases in the Pakistani population is in progress under the framework of international collaborative projects. We are optimistic to characterize the molecular basis of several diseases and handling of huge genomic data generated for providing the important insights for developing efficient disease prevention and genomic medicine in this consanguineous population.
INVITED TALK 8

By

Abdul Rauf Shakoori

Distinguished National Professor, Professor Emeritus
School of Biological Sciences, University of the Punjab

Distinguished National Professor and Director, School of Biological Sciences, University of the Punjab, recipient of the international ECO Award 2012 in the field of Science and Technology, which was conferred upon him during the 12th Economic Cooperation Organization (ECO) Summit, Baku, Azerbaijan (2012). He has has a distinguished scientific career, for which he has previously been recognized by Pakistan’s highest academic award Aizaz-i-Kamal by President of Pakistan (1996), a Civil Award Tamgha-i-Intiaz by the Government of Pakistan (1999), Distinguished Scientist of the Year Award by Pakistan Academy of Sciences (2011), Zoologist of the Year Award by Zoological Society of Pakistan (1997), and Scientist of the Year Award by the Ministry of Education, Government of Pakistan (1986).

Title of Talk
METASTASIS IS TRIGGERED BY GENES INVOLVED IN EPITHELIAL MESENCHYMAL TRANSITION

Abstract

Studying the metabolic pathways of cancer cells is considered as a key to control cancer malignancies and open windows for effective drug discovery against cancer. Of all the properties of a tumor, metastasis potential is a defining characteristic of a cancer cell. Metastasis is controlled by a variety of factors that directly control the expression of cell adhesion proteins. In this study we have investigated the expression of cell to cell and cell to matrix adhesion protein genes during the initial phases of attachment of human glioblastoma cancer cell line SF767 to the surface under glucose rich and glucose starved conditions. The aim was to imitate the natural environment of glucose availability to cancer cells during epithelial to mesenchymal transtion (EMT). In this study we have observed the gene expression of epithelial and mesenchymal isoforms of cadherin (E-CAD and N-CAD) and Ig like cell adhesion molecules (E-CAM and N-CAM) along with integrin. We observed that high glucose environments promoted cell survival and cell adhesion whereas low glucose accelerated EMT by downregulating the level of integrin, E-CAD and N-CAD, and upregulation of N-CAM. Low glucose availability also downregulated variety of structural and regulatory genes such as ZEB1A (Zinc finger E-box binding homeobox 1A), CTK (Cytokeratin), Snail and BCT (β Catenin) and upregulation of HIF1 (Hypoxia inducible factor 1), MMP13 (Matrix metalloprotease 13/Collagenase 3), VIM (Vimentin), p120 and FBPase (Fructose 1,6 bisphosphatase). Glucose conditions are more efficient for cancer studies in this case glioblastoma cells.
He is having PhD, CHPE, Master in Medical Education and Certificate in Precision Medicine, USA. He is member of American College of Clinical Pharmacology USA. He has supervised dozens of M.Phil/PhD students. He has 70 research articles and 6 Research Projects in pharmacogenetics and Toxicology. He has been awarded HEC Best University Teacher award in year 2011 (conferred in 2013). More, he is has been member of syndicate, academic council, board of faculty of Basic Medical Sciences, and chairman of M.Phil/PhD programs. He has started M.Phil PhD programs University of Malakand as well. He is on editorial panels of international journals including BMC series journals. Based on his contribution, he is persistently nominated for president’s Medal by the Higher Education Department of the Government of KP this year and last year.

Title of Talk
PROMOTING MERITOCRACY, ACADEMIC AND ADMINISTRATIVE AUDITS IN PAKISTANI UNIVERSITIES. WHAT IS WAY FORWARD?

Abstract
Meritocracy is related to mature use of power that should be vested in individuals based on talent, effort, and achievements. It is mature use of power that keeps an institution viable, motile and fertile. Academic audit is a faculty-driven model of ongoing self-reflection, collaboration, teamwork focused on a common goal for enhancing the quality of teaching and learning for a prosperous society through purposeful education. Administrative audit is a key to success in achieving excellence in view of targeted goals attributed to the vision of the institution. The current work is an attempt to know about alignment between the concept of academic audit and administrative audit in universities. In early phase, the Khyber Pakhtunkhwa Universities Modal Act 2016, Universities Act 2012 and the Khyber Medical University Act 2007 were blue printed for key words in the context of cited subject title. Content analysis was done through “online-utility.org”. Critical appraisal suggests that the acts and model statutes are least focused on about academic audit though Higher Education Commission has started the self-assessment report for the degree programs, which is good initiative. Academic audit is a complementary to administrative audit in universities beside financial audit. Administrative audit is key to good governance in the universities that are to be promoted institutions in a way acceptable to most of the stake holders. Thus, use of power of statutory bodies not only affects the process of academic audit but also necessitates for administrative audit, more precisely referring to self-assessment report of the administrative wing through a legitimate special meeting of the statutory bodies that shall meet once a year purely for reflection on previous decisions for review of the internal standards and rules of business or as the case may be. The composition shall not be the same for the special meetings of the concerned statutory bodies to promote transparency.
INVITED TALK 10

By

Prof. Dr Lars Allan Larsen

Department of Cellular and Molecular Medicine
University of Copenhagen, Denmark

Author of 5 book chapters and 85 peer-reviewed articles (several in high-impact journals). index: 34. Research group leader since 2004. Areas of expertise: medical genetics, genomics, heart development, congenital heart disease. Has received +10 mill Dkr in research funding as PI and +60 mill Dkr as co-PI. Joint publications and/or active collaborations with researchers from more than 15 countries, including CESeidman, J Seidman, C Burns (Harvard Medical School, Boston, US), RH Anderson, D Henderson (Newcastle University, UK), KL McBride (NationwideChildrens Hospital, Colombus, US), CA Loffredo (Georgetown University, Washington, US), P Andersen (Johns Hopkins University School of Medicine, US), R Hinton (Cincinnati Children’s Hospital Medical Center, US), MP Hitz (Welcome Trust Sanger Center, UK), Wilhelm Johannsen Centre for Functional Genome Research (centre of excellence established by the Danish National Research Foundation). 2004-09: Co-PI and Steering group member, UCPH Excellence Programme for Interdisciplinary Research. 2017- Supervision of 3 postdocs, 12 PhD stud., 20 MS stud. 22 PhD evaluations. Reviewer for +40 journals, The Wellcome Trust/ DBT India Alliance, UK; Biotechnology and Biological Sciences Research Council, UK; National Fellowships for Graduate Women in Science, US.

Title of Talk

GENETIC DISSECTION OF DISEASE MECHANISMS IN CONGENITAL HEART DISEASE
# Table of Contents

<table>
<thead>
<tr>
<th>Author/Authors</th>
<th>Topic</th>
<th>Page No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Kiran Aftab</td>
<td>Middle Miocene Giraffidae From Dhok Bun Amir Khatoon, Lower Siwaliks,</td>
<td>1.</td>
</tr>
<tr>
<td>Muhammad Akbar Khan</td>
<td>Pakistan</td>
<td></td>
</tr>
<tr>
<td>Zaheer Ahmed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Hafiz Muhammad</td>
<td>Evaluation Of Fasciola Proteins Antigens As Vaccine Against Fasciolosis</td>
<td>2.</td>
</tr>
<tr>
<td>Rizwan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muhammad Sohail Sajid</td>
<td>Developing Entrepreneurial Skills Among Vegetable Growers: Findings From Field Survey Punjab, Pakistan</td>
<td>3.</td>
</tr>
<tr>
<td>Haider Abbas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Khalid Mushtaq</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muhammad Waseem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Misbah Irshad</td>
<td>Biphenyl Analogues AsSynthetically And Pharmacologically Important Aromatic Structural Moieties</td>
<td>4.</td>
</tr>
<tr>
<td>Qamar Ali</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iqra Mazhar</td>
<td>Groundwater Quality Assessment And Its Human Health Risks In Gujranwala District, Pakistan</td>
<td>5.</td>
</tr>
<tr>
<td>Almas Hamid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muhammad Fiaz Qamar</td>
<td>Arachnophobia: The Type Of Most Common Mental Disorder</td>
<td>7.</td>
</tr>
<tr>
<td>Abeeha Asghar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Munazzah Yaqoob</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Khalil Ahamed</td>
<td>Density Functional Theory (Dft) Studies Of Thiols</td>
<td>8.</td>
</tr>
<tr>
<td>Dr. Muhammad Adnan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iqbal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syeda Ramsha Ali</td>
<td>Computational Modeling Of Ito/Pedot: Pss/ Ptb7:Pc71bm/Metal Type Organic Solar Cells</td>
<td>10.</td>
</tr>
<tr>
<td>Ifra Sardar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mehrreen Akhtur</td>
<td>Computation Of Randic’ And Sum-Connectivity Indices For Boric Acid Layer Structure</td>
<td>11.</td>
</tr>
<tr>
<td>Alizeh Muhammad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatima Farrukh</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dania Tahir  
Fatima Farrukh  

Solution Of An Exponential Function Using Diagonal To Diagonal Approach In Difference Table

12.

Lubna Rasheed  
Muhammad Yousuf  

Naphthalene Based Probe And Violation Of Dna Neighbor Exclusion Principle In Rna Recognition

13.

Zunaira Munawar  
Farza Baber  
Mamooona Riaz  
Dr. Fahad Ahmed

Quantum Internet: A Vision For The Better Future

14.

Rimsha Sajjad Khan  
Hira Shahid  
Dr. Muhammad Rizwan

Performance Analysis Of Ad-Hoc On Demand Distance Vector (Aodv) And Destination Sequenced Distance Vector (Dsdv)

15.

Maryam Irshad  
Muhammad Rizwan

Comparison Between Aodv And Dsdv Routing Protocols In Mantets

16.

Tayyaba Anjum  
Sammar Nathaniel  
Dr. Asma Saeed  
Dr. Khalid Saeed  
Farwa Iqbal  
Maham Iqbal  
Fatima Mohsin  
Dr. Muhammad Rizwan

Determination Of Aflatoxin & Heavy Metals In Zea Mays

17.

Neha Khalid  
Mishaal Sikander  
Soha Bint Zarar Khan  
Dr. Muhammad Rizwan

Multi-Hop Based Energy Efficient Routing Protocol For Hwsn

18.

Noreen James  
Sammar Nathaniel  
Naseem Zahra

Residual Energy Based Cluster Head Selection In Wsn.

19.

Ms. Bushra Mubarak  
Hasan Ejaz  
Kashaf Junaid  
Khalid Omer Abd Allah  
Faisal Mansour Alrwaili  
Saad Omar Al-Ahmad  
Ashwi Modhi Alrwaili  
Saeed Awadh Almutairi  
Abualgasim Elgaili

Aflatoxin Analysis Of Common Dry Fruits (Almonds, Peanuts And Pistachios) By Thin Layer Chromatography Method

20.

Bacterial Profile And Antimicrobial Resistance Of Uropathogenic Bacteria

21.
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Of Sumo Tag On Expression And Solubility Of Recombinant</td>
<td>Sidra Tul Muntaha</td>
</tr>
<tr>
<td>Prochymosin</td>
<td>Hooria Younas</td>
</tr>
<tr>
<td>A Relative Inquiry Of Scriptures Of Quran And Bible In Modern Age Of</td>
<td>Dr. Iram Naseer Ahmad</td>
</tr>
<tr>
<td>Science &amp; Technology</td>
<td></td>
</tr>
<tr>
<td>Investigating The Role Of Stress-Induced Ligands In Intestinal</td>
<td>Ramsha Nawaz</td>
</tr>
<tr>
<td>Tumorigenesis</td>
<td>Dr. Nadia Guerra</td>
</tr>
<tr>
<td>Expression And Purification Of Recombinant Buffalo Prochymosin</td>
<td>Aiman Kaleem</td>
</tr>
<tr>
<td>Using Pelb Leader Sequence And 6x Histidine Tag</td>
<td>Hooria Younas</td>
</tr>
<tr>
<td>Antibacterial Activity Of Pomegranate Rind Extract</td>
<td>Maryam Khan, Nida Iqbal Khan, Dr. Jahan Ara</td>
</tr>
<tr>
<td>Evaluation Of Biological Activities And Gc-Ms Analysis Of Acetone</td>
<td>Khadija Abdul Majid, Hooria Younas, Dildar Ahmed, Raazia Tasadduq</td>
</tr>
<tr>
<td>Extract Of Cannabis Seeds</td>
<td></td>
</tr>
<tr>
<td>Latest Technologies To Achieve Zero Discharge Of Hazardous Chemicals</td>
<td>Dr. Muhammad Saqib Nawaz</td>
</tr>
<tr>
<td>(Zdhc) In Textile Wastewater Treatment</td>
<td></td>
</tr>
<tr>
<td>Determination Of Antioxidant Activity And Phytochemical Analysis Of</td>
<td>Maha Shahid, Sammar Nathaniel, Dr. Muhammad Khalid Saeed</td>
</tr>
<tr>
<td>Fruit And Leaf Extracts Of Syzygium Cumini.</td>
<td></td>
</tr>
<tr>
<td>Biochemical Characterization And Thermodynamic Analysis Of Gh12</td>
<td>Fatima Akram, Ikram Ul Haq</td>
</tr>
<tr>
<td>Endo-1,4-B-Glucanase Cloned From Thermotoga Naphthophila Rku-10t In</td>
<td></td>
</tr>
<tr>
<td>A Mesophilic Host.</td>
<td></td>
</tr>
<tr>
<td>Rp-Hplc And Mass Spectrometric Analysis To Evaluate Proper Invitro</td>
<td>Hooria Younas, Naeem Rashid, Muhammad Akhtar</td>
</tr>
<tr>
<td>Refolding Of Proinsulin And Conversion To Insulin</td>
<td></td>
</tr>
<tr>
<td>Analysis Of On-Resistance In Normally-Off 4h-Sic Vertical Junction</td>
<td>Shabana Aziz, Saira Riaz, Shahzad Naseem</td>
</tr>
<tr>
<td>Field Effect Transistor</td>
<td></td>
</tr>
<tr>
<td>Serum Vitamin D In Women With Pre And Post Menopausal Newly</td>
<td>Amna Younus, Mariam Faiz, Abida Yasmeen</td>
</tr>
<tr>
<td>Diagnosed Breast Cancer In Pakistan</td>
<td></td>
</tr>
<tr>
<td>Single Photon Trapping By Rydberg Atoms For Spin Electronics’</td>
<td>Atia Tul Noor Pasha</td>
</tr>
<tr>
<td>Applications</td>
<td></td>
</tr>
</tbody>
</table>
Farkhanda Jabeen, Hajra Bibi
Perception Of Chemistry Teachers About The Application Of Information And Communication Technologies For The Conduction Of Practicals At Secondary Level 35.

Rashad Qadri Numrah Nisar Yadong Yang M. Azam Mohsin Bashir M. Tahir Akram
Characterization Of Nam/Cuc3-Related Genes From Oil Palm (Elaeis Guineensis) And Factors Regulating Their Expression During In Planta And In Vitro Development 36.

Nageen Saleem Fahad Ahmad Muhammad Rizwan Hasan Ejaz Kashaf Junaid
Relationship Of Liver Enzymes With Viral Load Of Hepatitis C In Hepc Infected Patients By Data Analytics 37.

Fatima Aamir Zeba Suhail Aiza Zafar Saima Tehseen Fatima Sarfrraz Madiha Rohi
Methods And Techniques In Mental Maths To Enhance The Thinking Power 38.

Aqsa Yahya Syyada Samra Jafri
Quinoa: Complete Protein And Fantastic Wheat-Free Alternative 39.

Dr. Mahwash Aziz Javeria Anwar Fakhra Ashraf Dr. Rabia Iqbal Aiza Zafar
Sugarcane (Saccharum Officinarum L.) Juice As A Functional Drink 42.

Dr. Afifa Khanam Ms. Varda Farhan
A Study Of The Relationship Among Aggressive Behavior, Intelligence And Emotional Intelligence Of Students Of Grade 5 43.

Farah Toqeer
Another Side Of Advanced Technology; Selfie Addiction And Personality Traits. 44.

Humna Shabir Fatima Zunash Ahmed
Energy Efficient Fuzzy Logic Based Clustering Algorithm In Wireless Sensor Networks 45.
Iqra Mazhar
Maham Zafar
Dr. Muhammad Rizwan

Madiha Rohi
Kiran Siddique
Mahreen Sattar

Hurdle Technology In Food Preservation

Muhammad Saad
Shanzah Aslam

E-Learning & Earning Online Using Knowledge Engineering (E-Leo)

Nashmia Kamran
Dr. Samra Jaffri

Lipid Profiling Of Automobile Workers To Screen Cardiovascular Risk Factors

Sidra Anwar
Abdul Wahab

Metadata And Its Impacts On National Security Agencies

Sarah Sumbal
Resham Arif
Zara Shehbaz

Nutritional Assessment Of Janitorial Staff Of Universities Of Lahore.

Sadaf Shakeel
Abu Bakar
Rabia Abid
Bakhtawar Aslam
Fahad Ahmad
Rabia Shah
Nadia Akram
Rabia Naz
Mahnaz Nasir Khan

Quantum Computing In Aerospace And Its Challenges

Effect Of Different Drying Methods On The Quality Of Pumpkin Fractions

Musa Khan

Development Of A Guidebook For Awareness On Celiac Disease

Aysha Shabbir

Single Shortest Path Migrating Birds Optimization (Sspmbo) Using
Maryam Shabbir
Dr. Muhammad Rizwan
Dynamic Programming For Dynamic Routing On Packet Switched Networks

Maryam Shabbir
Aysha Shabbir
Dr. Muhammad Rizwan
Energy Efficient V-Formation Clumping In Wireless Sensor Network

Maryam Butt
Nasreen Kausar
Development Of Nutrition Education Booklet On Management Of Diabetes

Mariam Waseem
Synthesis And Characterization Of Copper Oxide Nanoparticles From Plants Extract

Imama Ahmed
Shazia Zahra
Safeena Amjad
Evaluation Of Breastfeeding Exposure On Diarrhea Incidence Among Infants

Huda Rehman Mir
Asifa Irshad Kayani
Estimation Of Biodiesel Production By Monoculture Chlorella Spp. Fed With Carbon Dioxide Fraction Of Biogas Produced From Feedstocks

Hajra Bibi,
Aroosa Arshad
Nadia Akram
Syeda Aliya Sherazi
Nida Tasneem Khan
Development And Quality Evaluation Of Snack Foods Enriched With Date Seed Powder

Saleha Naghmi Habibullah
Farah Anjum
Khadija Noor Butt
Zohra Dar
Iqra Qurat-Ul-Ain
Quality Of Life Of Home-Based Workers In The Punjab: Urban/Rural Comparison

Saleha Naghmi Habibullah
Kessica Xavier
On The Closure Property Of Sia Log-Symmetric Random Variables Under The Reciprocal Transformation

Fatima Zia
Wafa Basit
Sara Hamid
Shezasohail
Nasreen Kausar
Fasiha Ilyas
Utilization Of Non-Dairy Sources For The Development Of Calcium Rich Recipes

Fatima Ihsan
Khadija Akhtar
Development Of Functional Foods For Cardiovascular Patients

Effects Of Food Additives On Human Health And Gut Microbiota
<table>
<thead>
<tr>
<th>Name 1</th>
<th>Name 2</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saima</td>
<td>Tehseen</td>
<td>Aloe Vera: Amazing Health Benefits</td>
<td>68.</td>
</tr>
<tr>
<td>Rabia</td>
<td>Iqbal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rizwana</td>
<td>Batool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mahwash</td>
<td>Aziz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidra-Tul-</td>
<td>Muntaha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatima</td>
<td>Sarfraz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tabinda</td>
<td>Mahmood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr.</td>
<td>Madiha</td>
<td></td>
<td></td>
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<tr>
<td>Ilyas</td>
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<tr>
<td>Atiqa</td>
<td>Farooq</td>
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<tr>
<td>Dr.</td>
<td>Hummera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rafique</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muhammad</td>
<td>Naseem</td>
<td>Synthesis And Biological Investigation Of Novel Thiazolidinone</td>
<td>69.</td>
</tr>
<tr>
<td>Zar</td>
<td>Afshan</td>
<td>Scaffold As An Antioxidants</td>
<td></td>
</tr>
<tr>
<td>Fizza</td>
<td>Tahira</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rida</td>
<td>Habib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr.</td>
<td>Tahira</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kalsoom</td>
<td></td>
<td>Computer Education At Secondary Level: Students Perceptions</td>
<td>70.</td>
</tr>
<tr>
<td>Maryam</td>
<td>Shabbir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aysha</td>
<td>Shabbir</td>
<td></td>
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<td>Dr.</td>
<td>Fahad</td>
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<td>Ahmad</td>
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<td></td>
</tr>
<tr>
<td>Ayesha</td>
<td>Shabbir</td>
<td>A New Approach: Cognitive Multi-Level Authentication (Cmla) In</td>
<td>71.</td>
</tr>
<tr>
<td>Dr.</td>
<td>Fahad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ahmad</td>
<td></td>
<td>Nuclear Command And Control</td>
<td></td>
</tr>
<tr>
<td>Bisma</td>
<td>Ifthikhar</td>
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<td>Memoona</td>
<td>Khalid</td>
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<td>Ilyas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tabinda</td>
<td>Mahmood</td>
<td>Health Benefits Of Beetroot: A Super Food</td>
<td>73.</td>
</tr>
<tr>
<td>Ayesha</td>
<td>Nasir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tahir</td>
<td>Alyas</td>
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<td>Aimen</td>
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<td>Atiqachandni</td>
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<tr>
<td>Hafsa</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Mahnaz Nasir Khan

Aleena Faruki
Shazia Zahra
Safeena Amjad

Assessment Of Dietary And Lifestyle Factors That May Trigger Migraine 80.

Aimen Qayyum
Arooj Raja
Dr. Muhammad Rizwan
Maryam Sheikh
Aiman Rashid
Alishbah Shahid
Hamda Manzoor
Memoona Khalid
Fasiha Ilyas
Syeda Aliya Sherazi

Performance Analysis Of Leach, Sep And Mgear In Hwsn 81.

Abdullah Nasir
Aslam Muhammad
Waqar Mirza
Sarah Shakeel
Syeda Kainat Nasir
Roman Shafiq

Nutrition Screening Of Elderly Rural Women 82.

Adina Mehmood
Erum Akbar Hussain

A Simple Approach Towards Synthesis Of Coumarinolignoid 84.

Afia Naeem
Kainaat Mahboob
Zarnab Khalid
Saira Raqib
Dr. Fahad Ahmad

Automated Teller Machine Security Management In Post Quantum Age Via Quantum Key Distribution 85.

Aisha Naz
Asma Rehman
Shakira Fareed

Analysis Of Production Of Raw Materials In Pharmaceutical Sector Of Pakistan 86.

Amber Kazmi

Implementation Of Wire Resistance Compensation Technique On Direct Sensor To Atmel 89c51 Microcontroller Interface 87.

Ambreen Ghani
Erum Akbar Hussain

Green Synthesis Of Anti-Inflammatory Thiazoles In Des 88.

Ammara Naeem
Dr. Hooria Younas

Molecular Studies Of E1 Protein Of Hcv-3a 89.
Amna Khalid
Samia Maqsood
A Proposed Circuit Of Darlington Pair Based On Triple Jfet

Amna Komal Khan
Komal Aslam
Aysha Saeed
Iram Anjum
Exclusion Mapping Of Three Microcephalic Families With The Aspm Gene

Amna Naeem
Dr. Nayla Munawar
Hplc Analysis Of Polyphenolic Compounds Extracted From Daucus Carota Subsp. Sativus With Organic Solvents

Dr. Anood Sohail
Roles Of Newly Identified Spastic Paraplegia Proteins In Organization Of Axonal Endoplasmic Reticulum

Anum Ashraf
Dr. Rabia Naz
Dr. Mahnaz Nasir Khan
Development Of Gluten-Free Flour Composite

Aqsa Ahmad
Nureen Zahra
Isolation And Identification Of Listeria And S.Aureus From Cheese And Milk

Areeba Rahman
Nageen Saleem
Dr. Fahad Ahmad
Enhancing Performance And Security Of Android Operating System Using Quantum Cryptography

Arooj Amjad
Amna Ali
Hina Humayun
Jasna Hamid
Public Speaking Enhancer “Right Platform To Conquer Your Fears”

Arshia Irfan
Dr Amna Younus
Sammar Nathaniel
Dr. Shahzad Bhatti
Evaluation Of Thyrotropin With Ovarian Reserve Markers In Primary Infertile Women Of Reproductive Age

Asifa Murtaza
Elucidating Hypoglycemic And Hypolipidemic Potential Of Microwave Assisted Lemon Grass Extracts Using Animal Model

Atiqa Zaidi
Detection And Quantification Of Foodborne Pathogens And Aflatoxin Residues In Dry Fruits

Atta-Ur-Rehman
Danish Nazir
M. Tanzeel Sarfraz
Fake Product Review Monitoring And Removal From Genuine Rating
Usama Nasir
Aslam Muhammad
Martinez-Enriquez A. M.

Ayesha Asghar
Rehana Zia
Madeeha Riaz
Tousif Hussain


Ayesha Kazmi
Fatima Zahra
Erfa Tariq
Dr. Muhammad Rizwan

Performance Analysis Of Aodv And Dsr In Ns2 103.

Ayesha Muddassir
Sara Ali

Assessment Of Occupational Health And Safety In Sme’s Of Multan, Pakistan 104.

Ayesha Saeed

Molecular Characterization Of A Multigenerational Kindred Affected With Autosomal Recessive Primary Microcephaly 105.

Ms Bahisht Rizwan
Ms Memoona Khalid
Ms Mahnaz Nasir Khan
Dr Aboidullah

Development Of Nutrition Education Program Using Health Belief Model To Promote Nutritional Behaviors Changes For Osteoporosis Prevention 106.

Bakhtawar Aslam
Rabia Abid
Dr. Muhammad Rizwan


Baleena Khan
Ms. Memoona Khalid

Effect Of Nutrition Education Intervention On Glycated Haemoglobin (Hbaic) In Patients With Type 2 Diabetes Mellitus 108.

Bazla Sarwar
Abdul Hanan
Muhammad Aslam
Asim Laeeq Khan
Asad Ullah Khan

Potential Of Metal Organic Frameworks (Mofs) To Treat Industrial Wastewater In Photocatalytic Membrane Reactor (Pmr) 109.

Anam Ul Haq
Hafiz M. Asif Javed
Wenxiu Que
Mehvish Sarfaraz
Muhammad Sarfraz
Rida Fatima
Wajeeha Iram

Synthesis Of Cs-Incorporated Nio2 Nanoparticles To Enhance The Performance Of Perovskite Solar Cells 110.
M. Irfan Ahmad
Hafiz M. Asif Javed
Wenxiu Que
Bilal Hassan
Asif Mahmood
Tariq Mehmood
Saima Yaseen

**Synthesis Of Graphene-Doped Ag Nano Particles To Enhance The Performance of Perovskite Solar Cell**

---

Muhammad Sarfaraz
Hafiz M. Asif Javed
Wenxiu Que
Wajeeha Irana
Areesha Hameed
Anam Ul Haq
Nadia Rasheed

**Strategic Design Of Graphene Plasmonic Nanocomposite Based Photoanode For Highly Efficient Plasmonic Dye Sensitized Solar Cells**

---

Asif Mahmood
Muhammad Shahzad Faisal
Hafiz M. Asif Javed
Wenxiu Que
Bilal Hassan
Rida Fatima
Ayesha Bashir
Nadia Akram
Rabia Naz
Mahnaz Nasir Khan

**Graphene Plasmonic Nanocomposite Based Photoanode To Enhance The Performance Of Dye-Sensitized Solar Cells**

---

Dr Shamaila Irum
Dr Shazia Shamas
Dr Haroon Ahmad
Dr Mazhar Qayyum

**Resistance/Susceptibility Trends Against Gastrointestinal Nematodes In Small Ruminants In Punjab**

---

Amina Mumtaz
Tariq Mahmud

**Preparation, Characterization And In Vitro Biological Evaluation Of New Schiff Base Transition Metal Complexes Derived From Sulfa Drug**

---

Saimayaseen
Hafiz M. Asif Javed
Wenxiu Que
Ayesha Bashir
Mehvish Sarfraz

**Fabrication, Characterizations And Applications Of Anatase TiO2 Nanotubes**
Khurram Ziaf
Mohsin Iqbal
Muhammad Ayub
Muhammad Awais Ghani
Iftikhar Ahmad
Osama Bin Abdulhafeez

Foliar Application Of Potassium Nitrate Can Improve Growth And Productivity Of Potato At High Soil Reaction

Dr. Mateen Abbas
Irshad Hussain
Abdul Muqeet Khan
M. Awais Khalid
Baber Naseem
Zara Hussain

Simultaneous Determination Of Imidacloprid And Acetamiprid Insecticides By Hplc Using A Modified Quechers Extraction Technique

Dr Muniza Malik Parvasha
Muzzaffar

Influence Of The Study Habits And Intrinsic Motivation On The Academic Achievement Of Undergraduate Students

Dr Rabia Nazir
Masooma Zawar
Almas Hamid
Eder C. Lima
Muhammad Raza Shah

Rapid Defluoridation Of Drinking Water By Calcium Carbonate Nanoadsorbent: Characterization, Adsorption Studies And Real Samples’ Treatment

Assessment Of Dietary Habits And Nutritional Status Of Pregnant Women Visiting Sir Ganga Ram Hospital Lahore

Dr. Rameeza Kaleem
Mahnaz Nasir Khan
Memoona Khalid
Fatima Tariq

Functional Food: A Multifarious Approach Towards Health Promotion And Well-Being

Rebia Ejaz
Saima Tehseen
Rizwana Batool
Mian Kamran Sharif
Rabia Iqbal

Cloning, Expression And Biochemical Characterization Of Thermostable Alkaline Serine Protease From Bacillus Haloduranes

Dur-E-Najjaf

Molecular Identification Of Bacterial Strains Isolated From Saishu, Skardu

Farah Saeed
Gul Zareen Ghafoura, Samina Nazirb
Sana Amjadb

Monitoring Of Growth Parameters Of Triticum Aestivum And Solanum Melongena Irrigated With Wastewater
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farwa Iqbal, Maham Iqbal, Fatima Mohsin, Amber Ayub, Jaweria Manzoor, Rida Hijab Basit</td>
<td>Bilingual Sentiment Analysis Of Political Tweets</td>
<td>127.</td>
</tr>
<tr>
<td>Farwa Iqbal, Maham Iqbal, Fatima Mohsin, Asma Basharat</td>
<td>Cryptocurrency - A Review</td>
<td>128.</td>
</tr>
<tr>
<td>Fatima Aamir, Zeba Suhail</td>
<td>Methods And Techniques In Mental Maths To Enhance The Thinking Power</td>
<td>129.</td>
</tr>
<tr>
<td>Fatima Manzoor, Hira Kiran Nasim, Sania Tariq, Dr. Muhammad Rizwan</td>
<td>Zone Based Cluster In Wsn</td>
<td>130.</td>
</tr>
<tr>
<td>Fatima Tariq, Mahnaz Nasir Khan, Memoona Khalid, Rabia Naz, Shahzadi Seher Sohail</td>
<td>Sesame Seeds And Hyperlipidemia: Are We Looking At Changing Ways For Treatment.</td>
<td>133.</td>
</tr>
<tr>
<td>Fazilat Ali Ahmad</td>
<td>Imagination For Creativity In Robots</td>
<td>134.</td>
</tr>
<tr>
<td>Ghazala Zia, Wasim Ahmad Khan, Dr. Sagheer Abbas</td>
<td>Iot Will Become Part Of Cognitive Computing</td>
<td>135.</td>
</tr>
<tr>
<td>Hafiza Iqra Munawar, Dr. Rizwana Batool, Dr. Mahwash Aziz, Fakhra Ashraf</td>
<td>Quinoa; A Wonder Food To Minimize The Future Nutritional Insecurity</td>
<td>136.</td>
</tr>
</tbody>
</table>
Sahar Bano

Hafiza Sanam Idfa
Illusion Based Learning Mechanism In Robots

Hafsa Naeem
Dr. Shazia Nouren
Green Synthesis Of Copper Oxide Nanoparticles Using Plant Extract Of Jasminium Sambac: Characterization And Assessments Of Its Photocatalytic Activity

Hajra Fatima
Blockchain; Security And Privacy For Iot

Hamna Younus
Dr. Humera Kausar
Detection Of Gram Negative Bacteria On The Door Handles Of Kinnaird College For Women, Lahore

Hina Humayun
Jasna Hamid
Arooj Amjad
Dr. Muhammad Rizwan
Hina Daud
Erum Akbar Hussain
Wsn And Hybrid Vgdra Approach For Energy Efficiency

Preparation And Characterization Of Biopolymer-Clay Hybrid Nanocomposites

Hira Shahid
Rimsha Sajjad Khan
Seher Fatima Fahad Ahmad
Café Automation System

Imama.Tul.Birrah Khan
Maira Naveed
Ms. Shabana Khurshid
Comparative Study Of Spin-Glass-Like Freezing And Enhanced Magnetization In Nano Particles

Iqra Naseer
Sumera Javad
Sumera Iqbal
Amina Tariq
Asma Ahmed
Enhancement Of Zea Mays L. Seedling Germination Under The Effect Of Zinc Oxide Nano-Fertilizers

Jane Albert
Samia Maqsood
Automatic Electronic Lock Using Microcontroller At89s51

Jasna Hamid
Arooj Amjad
Asma Basharat
Hina Humayun
Blockchain Technology As A Solution For Healthcare Wban Security Issues

Aqsa Naseer
Jawaria Iqbal
Bazghah Idrees
Dr. Muhammad Rizwan
Performance Analysis Of Leach, Sep And Tsep In Hwsn
Kaneez Fatima Erum Akbar Hussain
An Energy Efficient Approach Towards Imidazole

Kasaf Noor Erum Akbar Hussain
Solvent Free Protocols For Indole Amides Synthesis

Khadija Khaliq Ayesha Khaliq
Martinez Enriquez A. M
Muhammad Aslam
Muhammad Farhan
Rana M. Amir Latif
Using Vessel’s Location Map And Frangi Enhancement Filter An Efficient Retinal Vessel Segmentation

Komal Aslam
The Genetic Landscape Of Two Primary Microcephalic Families So Far

Komal Fatima
Sammar Nathanial
Dr. Amna Younas
Dr. Shahzad Bhatti
Assessment Of Thyrotropin With Ovarian Reserve Markers In Association With Body Mass Index Among Secondary Infertile Women

Komal Tariq
Isolation And Characterization Of Ornithobacterium Rhinotracheale From Ciliated Epithelium Of Gallus Gallus Domesticus In Lahore.

Laiba Fatima
Dr. Syyada Samra Jaffri
Dr. Masaud Shah
In Silico Screening And De Novo Structure Prediction Of Vncs As A New Drug Target In Streptococcus Pneumonia Type 2

Madiha Marriam
Amna Younus
Effect Of Anti-Tuberculosis Drugs On Human Liver

Mahnaz Nasir Khan Nida Ahmad Memoona Khalid
Hemp-Base Bar: A Weight Loss Formula For Young Female

M. Iftikhar M. N. Anwar B. K. Bakht M. A. Murtaza S. Sarwar Dr. Eng. A. Yasar
Anthropogenic Sources Of Carbon Dioxide And Its Effect On Earth’s Temperature

Mahnoor Naeem Dr. Ruqyya Khalid
Evaluation Of Genexpert In Diagnosis Of Smear Negative Tuberculosis Patients

Maria Rehman
Impact Of New Media On Children’s Creativity
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marwa Ghulam Bari</td>
<td>Development Of Iron Enriched Rice Flour Pasta To Address Nutritional Anemia In Experimental Subject</td>
<td>161.</td>
</tr>
<tr>
<td>Maryam Jamshed Khan</td>
<td>Impact Of Various Cooking Methods On Aflatoxin Residues And Heavy Metals In Different Meats</td>
<td>162.</td>
</tr>
<tr>
<td>Mavra Khan, Faryal Chaudhry, Rahila Huma, Zaib-Un-Nisa, Javeria Fatima</td>
<td>Estimation Of Selected Heavy Metals In Different Yogurt Samples Collected From Lahore</td>
<td>164.</td>
</tr>
<tr>
<td>Medhat Sabir, Zeb Saddique</td>
<td>Biological Effect Of Parthenium Hysterophorus L. And Tagetes Erecta L. Extracts On Germination And Seedling Growth Of Zea Mays L.</td>
<td>166.</td>
</tr>
<tr>
<td>Misbah Khalid, Naila Alam, Saleha Dawood</td>
<td>Measuring Key Factors Causing Academic Stress Among High School And University Students</td>
<td>167.</td>
</tr>
<tr>
<td>Mishaal Saeed, Rida Ali, Eman Arshad, Dr. M. Rizwan</td>
<td>Comparative Study Between Leach, M-Leach And Sep</td>
<td>169.</td>
</tr>
<tr>
<td>Ms. Memoona Khalid, Ms. Samia Khalid, Dr. Mahnaz Nasir Khan, Muntaha Azhara, Aysha Aftaba, Muhammad Abdur Rafyeb, Naila Latif, Dr. Fakhra Aziz, Nasreen Kausar, Samra Imran</td>
<td>The Effect Of Predisposing And Enabling Factors On Nutritional Status Of Children Ages 9-13 Years</td>
<td>170.</td>
</tr>
<tr>
<td></td>
<td>Comparison Of Dose Distribution Of Aaa And Pbc Algorithm Based Treatment Plans In Radiation Therapy</td>
<td>171.</td>
</tr>
<tr>
<td></td>
<td>Student’s Perceptions About Teacher’s Teaching Styles</td>
<td>172.</td>
</tr>
<tr>
<td></td>
<td>Role Of Medical Nutrition Therapy In Antecolic Side To Side Gastrojejunostomy: A Case Study</td>
<td>173.</td>
</tr>
<tr>
<td>Authors</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>Mahnaz Nasir Khan, Naveed Ul Haq, Rahmat Ullah, Dr. Rashida R. Zohra, Rafia Iq̣tadar Mirza</td>
<td>The Environmental Reciprocity Develops Entrepreneurial Scientists In The Universities</td>
<td>174.</td>
</tr>
<tr>
<td>Neha Khalid, Ms. Asma Basharat, Soha Bint Zarar Khan, Mishaal Sikander</td>
<td>Brailleman – Mobile Game For The Visually Impaired</td>
<td>175.</td>
</tr>
<tr>
<td>Nida Tasneem Khan, Mahnaz Nasir Khan, Syeda Aliya Sherazi, Rabia Naz</td>
<td>Effect Of Natural Sweeteners On Nutritional Value And Organoleptic Properties Of Selected Pakistani Sweet Dishes</td>
<td>176.</td>
</tr>
<tr>
<td>Qurat-Ul-Ain Aleem</td>
<td>Relationship Of Demographic Factors And Nutritional Status With Nutrient Intake Among 11 To 15 Years School Going Children In Lahore</td>
<td>178.</td>
</tr>
<tr>
<td>Rabia Iq̣bal, Tahir Zahoor, Saima Tehseen, Mahvish Aziz, Aiza Zafar, Rebia Ejaz</td>
<td>Viability Of Free And Polysaccharide-Protein Based Microencapsulated Bifidobacterium Bifidum Atcc 35914 And Their Effect On The Sensoric Properties Of Yoghurt During Storage</td>
<td>182.</td>
</tr>
<tr>
<td>Rabia Naz, Mahnaz Nasir Khan, Rana M. Amir Latif</td>
<td>Changes In Quality Attributes Of Beverages Upon Storage In Pet Bottles</td>
<td>183.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>184.</td>
</tr>
</tbody>
</table>
Syed Umair Aslam Shah
Osama Rizwan
Muhammad Farhan
M. Imran Ashiq
Rana M. Amir Latif
Muhammad Umer
Muhammad Farhan
Syed Umair Aslam Shah
Farah Ijaz

A Blockchain Based Framework For Healthcare Transformation

Rida Akbar
Dr. Safee Ullah Chaudhary

Oral Squamous Cell Carcinoma-A Systems Biology Perspective

Rozina Imtiaz
Rahat Ali Khan

Analysis Of Factors Influencing Small Business Entrepreneurship In Urban Pakistan

S. Fatima
Y.N. Rao
K. Zahra

Cpec As An Eco-Friendly And Sustainable Project In The Context Of Pakistan

S. Fatima
K. Zahra
Sadie Mehmood
Sammar Nathaniel
Dr. Amna Younus
Dr. Shahzad Bhatti

Climate Change Vulnerability Of Pakistan And Possible Adaptation And Mitigation Options Through Research And Development

Amh As A Prognostic Marker In Relation To Bmi Among Pcos Women Undergoing Ivf/Icsi Cycles

Sadia Shahid
Zubi Sadiq
Erum Akbar Hussain

Des Facilitated Synthesis Of Functionalized Pyrazolines

Sakina Hassan
Samia Maqsood

A Microcontroller Based Electronic Voting Machine

Saleha Dawood
Naila Alam
Misbah Khalid

Comparison Of Validity, Reliability And Statistical Analysis Of Likert And Visual Analogous Scale For Measuring Academic Stress Of Students

Sana Fatima
Anum Hayat
Rahila Huma
Anum Khaleeq

Quantitative And Qualitative Determination Of Phytochemicals In Selected Citrus Peels From Different Areas Of Punjab

Sara Nadeem
Dr. Fahad Ahmad
Nimra Dilawar
Sania Arooj

Implementation And Security Calibration Of Weather Management System For The Least Rainy Areas Of Pakistan Through Big Data Analytics In Quantum Regime
Shaima Saqib

Simrah Ibrar Sahibzada
Iqra Saeed

Suhail Mashooque
Mukesh Kumar
Vikram Dass
Umair Aftab
Filza Nizamani

Sultan Ali
Umar Khalid
Kashaf Yaseen
Ghazanfar Abbas
Muhammad Ashraf
Rizwan Aslam
Muhammad Shahid
Mehmood

Sumaira Naeem

Syeda Mariam Hasany
Anum Khaleeq
Miss Rahila Huma
Iqra Saleem Khan

Syeda Ramsha Ali
Saima Mubeen

Syedda Fatima Abid Shah
Dr. Shahid Bashir
Mr. Samee Ullah
Dr. Javaid Iqbal

Tabinda Nadeem
Sadaf
Sammar Nathenial
Amna Younas
Hooria Younas

Tayyabah Hassan
Wajihah Ajmal Khan Rabiya
Rehman
Dr. Fahad Ahmad
Dr. Muhammad Rizwan
Tayyabah Hassan
Wajihah Ajmal

Isolation And Characterization Of B-Galactosidase Producing Cold Adapted Strain

Graphical Representation Of Parabola, Hyperbola And Ellipse In Tropical Mathematics

Green Corrosion Inhibition Of Medium Carbon Steel By Onion Extract In HCl And Sea Water Environment

Revalence Of Multi-Drug Resistant Uropathogens Among Pregnant Females In District Faisalabad

Colloidal Nanotechnology In Anticancer Drug Delivery Applications

Estimation Of Radical Scavenging Potential, Metallic Content And Screening Of TPC And TFC Of Nigella Sativa And Chichorium Intybus Seed Extracts

Dependance Of Daily Output Of Solar Panel On Sun’s Radiations And Solar Cell Temperature In Lahore City

Bioefficacy Of Cinnamon And Lemongrass Tea On Metabolic Syndrome.

Association Of M235t And T174m Polymorphisms Of Angiotensinogen Gene With Preeclampsia Among Pakistani Women

Enhanced Edge Caching In Fog Based Radio Access Networks Through AI And Quantum Memory

5g Radio Access Networks Based On Fog Computing: An Overview
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Muhammad Rizwan, Tayyab Hassan, Saima Akram, Muhammad Rizwan, Fahad Ahmad, Xuebiao Yao</td>
<td>Mitotic Motor Cenp-E Cooperates With Prc1 In Temporal Control Of Central Spindle Assembly</td>
<td>207.</td>
</tr>
<tr>
<td>Umme Ayman</td>
<td>Synthesis And Characterization Of Transparent Conducting Oxide And Its Opto-Electronic Applications</td>
<td>208.</td>
</tr>
<tr>
<td>Wasim Ahmad Khan, Zainab Iqbal, Dr. Ruqyya Khalid</td>
<td>Processing Of Fish Skin Into Exotic And Unique Leather By Vegetable Tanning</td>
<td>210.</td>
</tr>
<tr>
<td>Asyesha Maqsood, Rida Fatima, Ayesha Khurshid, Dr. Faiza Hassan, Sana Noor, Umer Younas, Zeeshan Ahmed, Amna Mazhar, Shanila Bukhari, Asifa Kaiyani, Samina Hassan</td>
<td>Synthesis Of Antimicrobial Benzopyrrole Analogues</td>
<td>212.</td>
</tr>
<tr>
<td>Dr. Faiza Hassan, Sana Noor, Umer Younas, Zeeshan Ahmed, Amna Mazhar, Shanila Bukhari, Asifa Kaiyani, Samina Hassan</td>
<td>Cloud Based Knowledge Sharing In Robotics For Attention Mechanism</td>
<td>213.</td>
</tr>
<tr>
<td>Zainab Iqbal, Dr. Ruqyya Khalid</td>
<td>Recombinant Cloning Of Mycobacterium Tuberculosis Ppe Antigenic Protein In E.Coli</td>
<td>214.</td>
</tr>
<tr>
<td>Zarnia Bibi</td>
<td>Cloud Computing Influencing Factors In Higher Education Institutes In Developing Countries: A Proposed Model</td>
<td>216.</td>
</tr>
<tr>
<td>Zinnia Shah, Ambar, Raazia Tassaduq, Zirwa Tariq, Dr. Raazia Tasaddaq</td>
<td>Determination Of Antibacterial Activity Of Butanol Based Extracts Of Illicium Verum Against Escherichia Coli, Staphylococcus Aureus And Klebsiella Pneumoniae</td>
<td>217.</td>
</tr>
<tr>
<td>Zarina Bibi, Haseeba Syeda, M Hassan Shafiq, Imran Kabir</td>
<td>Determination Of Repellent Activity Of Organic Extracts Of Illicium Verum Against Aedes Aegypti Leach, Sep And Vsep</td>
<td>218.</td>
</tr>
<tr>
<td>Dr. Faiza Hassan, Sana Noor, Umer Younas, Zeeshan Ahmed, Amna Mazhar, Shanila Bukhari, Asifa Kaiyani, Samina Hassan</td>
<td>Preparation Of Anti-Aging Creams With Active Ingredients Extracted From Natural Sources And Comparative Study Of Their Antioxidant Activity</td>
<td>220.</td>
</tr>
<tr>
<td>Asyesha Maqsood, Rida Fatima, Ayesha Khurshid, Dr. Faiza Hassan, Sana Noor, Umer Younas, Zeeshan Ahmed, Amna Mazhar, Shanila Bukhari, Asifa Kaiyani, Samina Hassan</td>
<td>Effect Of Microwave Irradiated Water Under Drought Conditions On Growth Parameters Of Maize</td>
<td>221.</td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Isolation And Identification Of H.Pylori From Poultry Meat In Lahore ,Pakistan</td>
<td>222.</td>
<td></td>
</tr>
<tr>
<td>Neprotoxic Effects Of Lead-Based Paints In Occupational Painters</td>
<td>223.</td>
<td></td>
</tr>
<tr>
<td>Heart Attack Detection In Animals By Heartbeat Sensing Using Iot</td>
<td>224.</td>
<td></td>
</tr>
<tr>
<td>Security Issues In Wban</td>
<td>225.</td>
<td></td>
</tr>
<tr>
<td>Comparative Case Study: Zn-Ni-O Based Materials For Quantum Computers</td>
<td>227.</td>
<td></td>
</tr>
<tr>
<td>Assessment L2 Motivation Using Hierarchical Fuzzy Inference System</td>
<td>228.</td>
<td></td>
</tr>
<tr>
<td>Nfc Payment Security With Cloud Based Authentication System</td>
<td>229.</td>
<td></td>
</tr>
<tr>
<td>Fabrication Of Ni Doped Zno Nanoparticles By Coprecipitation Method</td>
<td>230.</td>
<td></td>
</tr>
<tr>
<td>An Earth-Centered Approach To Bengali Fiction</td>
<td>231.</td>
<td></td>
</tr>
<tr>
<td>Eco Poetics: Sufi Tradition To Initiation</td>
<td>232.</td>
<td></td>
</tr>
<tr>
<td>Variation in nutritional, phytochemical composition, antioxidant,</td>
<td>233.</td>
<td></td>
</tr>
<tr>
<td>enzymatic and antibacterial properties of fresh and oven dried wild</td>
<td></td>
<td></td>
</tr>
<tr>
<td>leaf extracts of mountain and plain areas of Khyber Pakhtunkhawa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Waqas Ahmed
Masood Sadiq Butt
Mian Kamran Sharif
Nehal Umar
Urwa Tariq
Anam Hameed

Rutf: Emerging Approach To Combat Malnutrition

Dr. Javaid Aziz Awan
Afia Naeem
Hafiza Ammara Khalid
Dr. Muhammad Rizwan
Aveen Fawad
Gull-E-Lalah Saleem
Sana Hashmi
Aysha Saeed
Iram Anjum

Food Safety And Halal Foods

Enhanced Clustering Based Routing Protocol In VANET

Aveen Fawad
Gull-E-Lalah Saleem
Sana Hashmi
Aysha Saeed
Iram Anjum

Prevalence Of Cyp19a1 Polymorphism Rs2414096 In Females Affected With Polycystic Ovarian Syndrome In Pakistan

Dr. Javaid Aziz Awan
Afia Naeem
Hafiza Ammara Khalid
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Prevalence Of Cyp19a1 Polymorphism Rs2414096 In Females Affected With Polycystic Ovarian Syndrome In Pakistan
MIDDLE MIOCENE GIRAFFIDAE FROM DHOK BUN AMIR KHATOON, LOWER SIWALIKS, PAKISTAN

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Abstract

The oldest dental material of Giraffidae belongs to the Middle Miocene taxon. These specimens have been reported from the outcrops of Dhok Bun Amir Khatoon, district Chakwal, Punjab, Pakistan and is represented by two extinct species; Giraffokeryx punjabiensis and Giraffa Priscilla. Our described material comprises isolated teeth, maxilla and mandible fragments which shows some primitive features for the Lower Siwalik giraffids. The newly described lower check teeth are narrow and rectangular with a very weak stylids and median ribs. The small sized giraffids preferred to inhabit wooded mean forested areas of the Lower Siwalik Group. The estimated age of this locality is 14.2-11.2 Ma. These species were disappeared before the onset of the Dhok Pathan Formation (ca. 10.2 Ma).

Keywords

Giraffidae, Siwaliks, Middle Miocene, Giraffokeryx, Giraffa.
EVALUATION OF FASCIOLA PROTEINS ANTIGENS AS VACCINE AGAINST FASCIOLOSIS

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Abstract
The liver flukes *Fasciola (F.) hepatica* and *F. gigantica* cause infectious disease in ruminants and humans all around the world. Although anthelmintic treatment is effective against disease, emerging drug resistant strains leads to the development of a vaccine. Vaccine target antigens have been isolated and characterised from the fluke. A number of protein, recombinant protein and plasmid DNA has been evaluated as vaccine candidate for the control of fasciolosis and other helminth infection. Cysteine proteases are probably the most important facilitators of virulence in flukes and are produced by all stages of the fluke life-cycle. Juvenile fluke target antigen-cathepsin B induces better immune protection than adult fluke antigen-cathepsin L5. On the other hand DNA vaccines have excellent potential to induce both humoral and cellular immunity in vaccinated animals. Although cellular infiltration and high anti-fluke antibody titres were observed in many immunisation studies but there are some factors responsible for slowing down the development of an effective vaccine. Further studies related to dosage optimization, novel target antigens and the number of exposures to the recombinant Ag required to maintain protection are needed to define the commercial potential of the vaccine.

Keywords
Fasciola, Vaccine, Immunization, Fasciola Protein.
DEVELOPING ENTREPRENEURIAL SKILLS AMONG VEGETABLE GROWERS:
FINDINGS FROM FIELD SURVEY PUNJAB, PAKISTAN

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Abstract
Urbanization, rising incomes and changing consumer preferences for value-added agri. products has provided opportunities to farmers to benefit from rising market trends. This evolving market phenomenon demands different types of skills from farmers i.e., from production of good quality food and operational management skills to additional skills in the fields of marketing and selling, strategic management, networking i.e., entrepreneurial skills. Unfortunately, decades of state intervention in agriculture sector have encouraged farmers to look on to the state to give them guidance on farm management rather than helping them to anticipate or to innovate as individual farm entrepreneurs. Therefore, present study was initiated with the objective to find answers to some crucial questions connected with the subject and field survey was designed to collect information from peri-urban vegetable growers (90 in numbers) from Faisalabad, Punjab Pakistan. Findings reveal that above 90% farmers apply creative and innovative ideas in their farming business; about 95% farmers diversify their farm business to cope with risk; 98% farmers have networking skills i.e., openly share information and encourage others to share; 98% farmers have production plan for their farming business; 96% farmers monitor their farm business and compare and assess actual performance and results against expectations; 67% farmers participated in formal trainings conducted by extension agents/seed/pesticide/fertilizer companies to improve their entrepreneurial skills. However, study finds that farmers need improvement in their marketing management skills i.e., branding, packaging, advertisement, cooperative sales, farmers’ markets, use of ICT in direct sales to corporates and consumers.

Keywords
Entrepreneurial skills, Vegetable growers, Field survey, Farmers behavior, Pakistan.
BIPHENYL ANALOGUES AS SYNTHETICALLY AND PHARMACOLOGICALLY IMPORTANT AROMATIC STRUCTURAL MOIEITIES
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Abstract
The substituted biphenyls can be used for synthesis or condensation of another active group with itself which are pharmacologically significant thereby forming the compounds with altogether new activity. A series of synthetic biphenyl analogues based on Fast Blue B Salt were synthesized and evaluated for in-vitro antileishmanial and antiglycation activities. In-vitro antileishmanial bioassay was performed by using standard antileishmanial compounds, amphotericin B and Pentamidine. Compounds 1-4 (57.2 - 91.89 ± 0.18 μM), were found to show moderate activities as compared to the standard pentamidine (IC50 = 5.09 ± 0.04 μM) and amphotericin B (IC50 (μg/mL) ± S.D. = 0.29 ± 0.05) respectively. Biphenyl synthetic analogues were also screened as antiglycation activity. Compounds 2a-e, and 4a-b showed very less antiglycation activity as compared to rutin taken as a positive control and standard inhibitor, while 2a was found to be inactive.

Keywords
Biphenyl Analogues, Antileishmanial Bioassay, Amphotericin B, Pentamidine, Antiglycation Bioactivity.
GROUNDWATER QUALITY ASSESSMENT AND ITS HUMAN HEALTH RISKS IN
GUJRANWALA DISTRICT, PAKISTAN

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Abstract
Access to safe drinking water has become a major problem around the world especially in developing countries like Pakistan, thereby increasing vulnerability to water borne diseases due to intake of contaminated water. The present study was undertaken to assess quality of groundwater; examine spatial distribution patterns of water quality parameters and identify prevalence of waterborne diseases and health risk to humans. Eighty groundwater samples were collected from different areas of Gujranwala and analyzed following Standard American Public Health Association methods. Questionnaire survey, related to water borne diseases was also carried out. Results indicated that 97.5% water samples were bacteriologically contaminated while 6.25% samples exceeded total dissolved solids (TDS), 8.75% samples exceeded limit for hardness and 5% samples exceeded turbidity limit when compared with World Health Organization and National Drinking Water Quality Standards of Pakistan. Heavy metals arsenic (As), cadmium(Cd), nickel(Ni) and chromium (Cr) were not in compliance showing mean concentration of 0.0161±0.0259 mg/L, 0.00143±0.00315 mg/L, 0.0094±0.0090 mg/L and 0.2738±0.3445 mg/L respectively. Mean concentration of metals in drinking water showed Cr > Cu > Zn > As > Co > Ni > Cd trend. Health Risk Index (HRI) was also calculated. For Cd one sample showed HRI value > 1 for child and adult; while HRI for As showed values > 1 for child and adults. The study concluded that owing to anthropogenic activities, groundwater quality of study areas of Gujranwala has mostly deteriorated. Fecal contamination (FC) showed ongoing pollution from external sources like abandoned boreholes and cross connected eroded sewerage and water pipe lines. So, it is important to take corrective and preventive measures to control ground water contamination and devise ground water regulatory frame work, in collaboration with district government, to avoid further deterioration of groundwater and protect human health and environment.

Keywords
Fecal Contamination, Water Borne Diseases, Heavy Metals, HRI, Spatial Distribution Patterns.
ENGINEERING SAFETY CASE ARGUMENTS USING GSN STANDARDS
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Abstract
In Europe, over ongoing years, the obligation regarding guaranteeing the system safety has moved onto the developers and engineers to build and present well-reasoned arguments underlying the structure and presentation of obtuse document. These arguments together with supporting solutions and constraints are typically referred to as a “safety case”. This study aims to benefit the risk-based Safety domain by demonstrating or clarifying how the set of evidence items may be combined together and argued to present the structure of engineering arguments. Therefore, an algorithm is proposed to serve the purpose following GSN standards while engineering the cases. The system would explicitly represent the individual elements of any safety argument i.e. requirements, claims, evidence and context; and relationships that exist between these elements. It will reduce the complications and misunderstandings due to poor communication between Safety arguments in safety cases and would strengthen the safety-critical industries in result.

Keywords
Goal Structuring Notation; Safety Cases; Engineering Arguments; Risk-Based Safety Domain, Structuring Notations.
ARACHNOPHOBIA: THE TYPE OF MOST COMMON MENTAL DISORDER

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Abstract
Phobias are the most common mental disorders, over lifetimes 11% of people will have a phobia. The behavior of women changes when they encounter a spider, scorpion or any other arachnid. Some freak out on their sight, some try to murder them and some find them so adorable despite of the danger they are liable to. But this is not all; sometimes the reactions are not just this simple and can be horrible. Some people get panic attacks, some lose their vision and go through fits and even get paralyzed. Such reactions were not just because of a fear it is the most common mental illness called ‘Arachnophobia’. Arachnophobia is an extreme form of fear of spiders, scorpions or any other arachnid. Fear protects you from danger, arachnophobia have little to do with danger. While most people get jitters if a spider crawls on their arm, people suffering from arachnophobia are physically and/or psychologically impaired by it. With a phobia, you may know your anxiety and fear are not warranted, but you can’t help the feelings. And they can be so intense they virtually paralyze you. So, never make fun of a woman or any other person on their reaction to such creatures as spiders and scorpions. Not only women, men are equally prone to this phobia. These phobias already have life altering effects and our bullying adds to it. They cause people to change how they live in order to avoid the objects of their fear. They make attempts to conceal the phobia from others. Some people with phobias have problems with friends and family, fail in school, or lose jobs while struggling to cope. Origins of phobias are unknown but there are nature and nurture components to phobias, with genetics playing a role, as well as environment, meaning maybe someone had a negative or traumatic experience related to the core of their phobia.

People are generally not treated for phobias and in a country like ours in which nation is still undergoing development people hesitate to even visit a psychologist. A very small percentage with a phobia go in for a treatment, not before a person’s phobia is extremely severe. One of the therapeutic approaches used to treat any phobia like arachnophobia is ‘cognitive-behavioural modification’. It is a therapeutic approach that combines the cognitive emphasis on changing performance through modification of reinforcement contingencies. Simply if you change the way you think, it will change the way you act, and if you change the way you act, it will change the way you think. It’s a game against the phobia: invite the feelings that make you fearful and anxious and learn to tolerate them, setting aside relaxation as a core piece of treatment and using intensity instead -- that’s fastest way to get better.

The most common treatment used in the past was systematic desensitization. In this treatment people were taught to relax and in that relaxed state, in a hierarchical way, they would have increased degrees of exposure to their fear. Over time, the fear lessens as the person builds confidence. This is often accompanied by talk therapy to help the person change how he or she thinks and develop new patterns of response to situations that might trigger the emotions associated with a phobia. The good news is treatment helps 90% of people who follow through.
Abstract
The density functional theory (DFT) is currently the most successful and the most optimistic approach for analyzing the automated structure of substance. In this theoretical job, the density functional theoretical (DFT) calculations were applied on Cystine and Captopril by using B3LYP/6-31G and 3-21G level in Gaussian 09 software to investigate their structure and properties. Cystine, captopril and their derivatives are thiol compounds. They are the most attractive and important class of organic compounds. They have wide range of applications e.g. in the medicinal chemistry, they act as antioxidants, and their properties were studied computationally. Many of their derivatives act as anticancer, antifungal, antimicrobial, antithrombotic, antianxiolytic agent and glycogen phosphorlyase inhibitors. The density functional theoretical (DFT) calculations were applied on Cystine and Captopril to optimize their structures. Molecular orbital calculations for example, NBOs (Natural bond orbitals) NLOs (Nonlinear optics), HOMO–LUMO calculations, energy distance, antioxidant properties, Mullikan Charges and atomic charge of the compounds were executed at the same level of density functional theory. The stability of the compound is due to hyper conjugation and delocalization of charges which was studied on the basis of NBO analysis. Stabilization energy related to π interactions and lone pairs was resulted by natural bond orbital analysis. The Mullikan atomic charges of compounds were also calculated.

Keywords
Investigate, Optimized, Delocalization, NBO.
Abstract
Biometric technology is simply the measurement and uses the unique characteristics of living humans to distinguish them from one another using passwords and tokens to compare them as they can be lost or stolen. The biometric authentication provides the ability to require more instances in such a quick and easy manner that users are not bothers by the additional requirements. The biometrics are implemented endangers values, norms and practices for conceptions of transparency, data privacy. Instead of numerous advantages of biometrics-based personal authentication systems over traditional security based on token or knowledge systems, they are vulnerable to attacks that can decrease their security considerably. Detecting intruders is a major apprehension to both organizations and governments. Biometrics is not problematic, but their use for diverse purposes is and raises serious ethical issues about their impact on society. Recently the most used applications for prevention or detection of intruders are intrusion detection biometric systems. Accepting a broad definition of biometrics to include behavior and emotion opens the door to and is the pre-condition of a quantum cognitive intrusion detection system of commodified citizens. Behavior biometrics offer a tool which may enhance the security of user authentication and intrusion detection application, in some cases with very low impact on the systems users. They are most useful in multimodal systems as a complement to more robust methods largely because most behavioral biometrics is highly sensitive to the means of implementation. Behavior biometrics offers completely inconspicuous techniques to identify the individuals. Such inconspicuous may be challenging from the point of view of collecting user consent, as required by law in many jurisdictions. Quantum Cognitive intrusion detection system is proposed as a safeguard for citizens’ privacy and data protection in the wider sense.

Keywords
Abstract

Bulk heterojunction based organic solar cell technology has gained immense attention due to its excellent light harvesting properties and economically viable electrical energy. An increased evolution has been seen in the power conversion efficiency by altering different layers of the bulk heterojunction organic solar cell. Organic solar cells at a laboratory level have shown limited power conversion efficiency. Here we manifest, a polymer-fullerene bulk heterojunction in which PTB7:PC71BM is incorporated as an active layer over PEDOT: PSS followed by ITO substrate, GPVDM software is then used to analyze the cell performance. The software is used to study the effect of 3 different metals, Aluminium (Al), Gold (Au) and Silver (Ag), on photon density, photon absorption, and other photovoltaic parameters. Enhancement in the performance of cell such as open-circuit voltage and fill factor is observed by using Aluminium (Al) metal layer, because of the better photon density absorption. Investigation further proceeds with Al by changing the thickness of the active layer (PTB7:PC71BM), and the optimal thickness of the active layer is found to be 200 nm. Furthermore, impact of varying the light intensity on performance parameters of the organic bulk heterojunction solar cell is investigated which shows a significant increase of open circuit voltage by increasing the light intensity.

Keywords

Organic Photovoltaic Cell, PEDOT: PSS, PTB7:PC71BM, GPVDM.
Abstract
Chemical compounds have different physicochemical, pharmacological and toxicological properties which are used in predicting their nature in chemical phenomena and in designing special compounds and drugs. The study of these properties requires the laborious experimentation and reaction process. Calculating topological indices, an alternative way to this time-consuming process was developed about 150 years ago, by modelling chemical compounds. Miscellaneous mathematical and computational methods are applied for the calculation of Randic’ and Sum-Connectivity indices for boric acid (H₃BO₃) layer structure in this research paper. The present study involves the computation of the four versions of Randic’ Index i.e. Randic’, General Randic’, Reciprocal Randic’ and Reduced Reciprocal Randic’ Indices; and the two versions of Sum-Connectivity Index i.e. Sum-Connectivity and General Sum-Connectivity Indices.

Keywords
Topological Indices, Randic’ Index, Sum-Connectivity Index.
SOLUTION OF AN EXPONENTIAL FUNCTION USING DIAGONAL TO DIAGONAL APPROACH IN DIFFERENCE TABLE
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Abstract
The contributions of numerical analysis in simplifying complex problems are countless. From natural sciences to social sciences, from computer graphics to engineering, the iterative methods of this subject have contributed a great deal to the advancement in different scientific and non-scientific fields. This research provides an alternate approach to finding closed form solution of exponential function. In this paper, closed form solution of the function $f(n) = (n+1)^k \cdot j^*(n+1)$ where $k \geq 0$ and $j \geq 2$, using diagonal to diagonal approach was generated.

Keywords
Forward Differential Table, Exponential Function.
NEPHTHALENE BASED PROBE AND VIOLATION OF DNA NEIGHBOR EXCLUSION PRINCIPLE IN RNA RECOGNITION

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Abstract
Phenomenon of DNA intercalation has been very beneficial for engineering DNA-based functional materials. It is generally expected that the intercalation phenomenon in RNA would be similar to that in DNA. In this study it is found that the neighbor-exclusion principle is violated in RNA by naphthalene-based cationic probes, in contrast to the fact that it is usually valid in DNA. All the intercalation structures are responsible for the fluorescence, where small naphthalene moieties are intercalated in between bases via p–p interactions. Moreover, the structure is supported by hydrogen bonds between the cationic moieties and the ribose-phosphate backbone, which results in specific selectivity for RNA over DNA. This experimentally observed mechanism is supported by computationally reproducing the fluorescence and CD data. MD simulations confirm the unfolding of RNA due to the intercalation of probes. Elucidation of the mechanism of selective sensing for RNA over DNA would be highly beneficial for dynamical observation of RNA which is essential for studying its biological roles.

Keywords
DNA Recognition, Neighborhood Exclusion Principle, RNA.
QUANTUM INTERNET: A VISION FOR THE BETTER FUTURE

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Abstract
The internet—a vast network that enables concurrent long-range classical communication—has had a groundbreaking impact on our world. Today information can be accessed very easily. Internet access has made sharing, communication and connectivity very simple. Unfortunately such access, allow malicious attack which can cause serious consequences. It can handicap business, computers, and government and can ruin lives too along with this the classical internet allow us to download and upload data in few seconds and still due to traffic on the network there is a delay while handling Big Data. Swap operation and teleportation minimization is the main problem. To overcome these problems Quantum key distributions (QKD) and Quantum Time Triggered Protocol (TTP) is used. Quantum cryptography can help in analyzing threats and respond to attacks and security incidents. Quantum mechanics ensures that estimating quantum data disturbs that data; and used to distinguish eavesdropping in QKD. Quantum TTP will enhance speed of internet. It will allow heavy data to get transferred without any hindrance. Quantum property of Entanglement is used to attain superposition of particles. The vision of a quantum internet is to fundamentally enhance internet technology by enabling quantum communication between any two points on Earth. Such a quantum internet may operate in parallel to the internet that we have today and connect quantum processors in order to achieve capabilities that are provably impossible by using only classical means. Here, we propose stages of development toward a full-blown quantum internet and highlight experimental and theoretical progress needed to attain them.

Keywords
Quantum Internet, Quantum Key Distribution, Entanglement, TTP, Teleportation, Quantum Gates.
PERFORMANCE ANALYSIS OF AD-HOC ON DEMAND DISTANCE VECTOR (AODV) AND DESTINATION SEQUENCED DISTANCE VECTOR (DSDV)

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Abstract
Mobile Ad Hoc Network (MANET) is an effective communication network which eliminates the use of centralized coordinator which allows the nodes to link directly. This journal offers a performance analysis of routing protocols, Ad-Hoc On Demand Distance Vector (AODV) and Destination Sequenced Distance Vector (DSDV). Routing protocol is an accepted standard used in transmitting data to ascertain the route approach taken. The simulation tests were conducted using NS-2 network simulator to evaluate the individual performance of both the MANET architecture routing protocol performance. The parameters used to evaluate routing protocol performance aspects are the throughput and packet delivery (PDR). The analysis demonstrates that AODV produces a better performance in terms of throughput and packet delivery ratio, compared to the DSDV protocol.

Keywords
MANET, AODV, Simulator, Wireless Ad Hoc Networks, DSDV Protocol
COMPARISON BETWEEN AODV AND DSDV ROUTING PROTOCOLS IN MANTETS
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Abstract
MANET, a dynamic infrastructure-less network of wireless devices which has been a major focus of research for a while because of the special characteristics it offers and advance contrivance it requires. Mobile ad hoc network is a network of mobile nodes without any governmental node or server. Communication among these nodes occurs by following neighbor-to-neighbor approach for message conduction from source node to target node. Having such distinctive capabilities, a network must have routing protocols with exceptional attributes i.e. numbers of hops between sender and receiver, enduring energy and transmission influence of a node and node link delay. In this paper, two prevalent routing protocols, Ad hoc On Demand Vector AODV and Destination Sequence Distance Vector DSDV are compared whose simulation has been carried out on NS-2 simulator to study them in heterogenous performance of MANET structure.

Keywords
Component: Manet, Infrastructure, Aodv, Dsv, Ns-2
DETERMINATION OF AFLATOXIN & HEAVY METALS IN ZEA MAYS
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Abstract
Corn is the third most commonly consumed cereal in Pakistan, however, it is vulnerable to fungal and heavy metal intoxication during production, harvest, storage and food processing. Aflatoxins are secondary metabolites which are predominantly produced by two fungal species; Aspergillus flavus and Aspergillus parasiticus; likewise heavy metals are also a major contributor in plant intoxication. The prevalence and level of human exposure to aflatoxins on a global scale have been reviewed, and the resulting conclusion was that ≈ 4.5 billion persons living in developing countries are chronically exposed to largely uncontrolled amount of the toxin. They are known to cause liver cirrhosis leading to cancer. The present study involved the estimation of aflatoxins and heavy metals through thin layer chromatography and atomic absorption spectrometry in 20 samples of Zea Mays (corn) which were collected from wholesale markets within different districts of Punjab. The samples were screened and analyzed for presence of aflatoxin B₁, B₂, G₁ and G₂ and heavy metals like Chromium, Mercury along with iron which is too considered as essential toxic metal. The results showed the presence of aflatoxins contamination among 13 samples in which 4 samples gave values below the permissible limit (20 ppb) whereas 9 were found to have higher values i.e. >20 ppb. The findings concluded that, out of positive aflatoxin samples 31% were safe to use and 69% were unsafe. Among the heavy metals 3 samples showed high levels of iron i.e. > 53mg/kg which is far greater than the permissible limits of iron. Hence, it is important to recognize these fungal toxins and toxic metals as a high priority problem because these are ultimately contributing to the burden of diseases across the world.

Keywords
Zea Mays, Aflatoxin B₁, Thin Layer Chromatography, Cancer, Toxic Metal.
MULTI-HOP BASED ENERGY EFFICIENT ROUTING PROTOCOL FOR HWSN
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Abstract
Energy optimization is the major challenge while designing an energy efficient routing protocol for WSN as the whole life time of the network is dependent on the energy consumption. To lower the energy constraint, various research works are existing irrespective of multi-hop short distance communication between the cluster heads and the sinks. This paper proposes a novel approach named as Clustering based Multi-hop Energy Efficient Protocol for Heterogeneous WSN that enhances the life span and stability of the network. In this solution, the cluster head transmits the collected data from its member nodes to the sink through the nearest cluster heads. It is a two-layered approach in which first layer is used for the selection of cluster head and the second is used for routing. The simulation results show that our proposed routing scheme can achieve longer sensor network life, better energy balance and efficiency as compare to conventional routing protocols.

Keywords
Multi-hop Energy Efficient Protocol for Heterogeneous WSN, heterogeneous, cluster head, sink, WSN, sensor nodes.
RESIDUAL ENERGY BASED CLUSTER HEAD SELECTION IN WSN
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Abstract
A Wireless Sensor Network (WSN) consists of large number of low power sensor nodes. Node sense entire network communicate with other nodes collect and gather data from them and pass it to the sink(base station). While designing Wireless Sensor Network, energy and power consumption by sensor nodes is considered to be the most important issue which latest researches aim to overcome. Since, it is sometimes impossible to recharge or replace batteries of sensor nodes, clustering algorithms play a significant role in power conservation for the energy constrained network. Selecting an appropriate cluster head can thereby, reduce the load and increase network lifetime by balancing energy. The paper focuses on efficient cluster head selection based on residual energy. In residual energy based cluster head selection clustering algorithm, entire network is divided into cluster head and member nodes. Cluster head for each cluster is selected by comparing energy of all the nodes with one another, one having the maximum energy become the cluster head. This goes for one round; cluster head position rotates in every round calculating network’s remaining residual energy. Comparative Analysis of this algorithm with LEACH and SEP has been done, result shows residual energy based CH selection is more effective then polling based CH selection. The simulation results also shows enhanced network lifetime as compared to all those existing in the literature.

Keywords
AFLATOXIN ANALYSIS OF COMMON DRY FRUITS (ALMONDS, PEANUTS AND PISTACHIOS) BY THIN LAYER CHROMATOGRAPHY METHOD

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Abstract
Aflatoxins are the carcinogenic mycotoxins which are produced by various fungal species owing to the availability of the favorable habitat for their growth. There are different types of aflatoxins which are B1, B2, G1, G2, M1, and M2. The most carcinogenic form of aflatoxins is B1. Approximately 13 fungal species are known, till date, to be responsible for the release of these toxins; which infer carcinogenic, teratogenic, immunosuppressive and mutagenic alterations within the affected organism. Aspergillus flavus and Aspergillus parasiticus contaminate human food and release toxins. These fungal species release toxins during the hot, humid, stressed and dry weather. These species contaminate a wide range of food i.e. nuts, rice, wheat, barley or many kinds of seeds. This can lead to lethal consequences on the afflicted organisms on exposure. These toxins are responsible for various health problems associated with liver and immune system. The study undertaken targeted 15 branded and 15 non-branded samples of dry fruits namely almonds, peanuts and pistachios, whose aflatoxin levels were estimated using thin layer chromatography technique. The findings were compared with the international standard permissible limits according to the European Union and it was concluded that the standard values for aflatoxin B1 levels would be 2ppb and 4ppb for total aflatoxins. In this study only 3 non-branded samples exceeded the permissible limit values i.e. 1 peanut and 2 almond samples gave positive results (almonds 5.83 ppb and 2.42 ppb, peanut 3.14 ppb). In the other samples aflatoxins were not detected. This study aimed to detect the aflatoxin levels in dry nut samples and their posing effects in humans.

Keywords
Aflatoxins, Fungal Species, Carcinogenic, Dry Fruits, Thin Layer Chromatography
BACTERIAL PROFILE AND ANTIMICROBIAL RESISTANCE OF UROPATHOGENIC BACTERIA

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Abstract
Our objective of study was to determine the occurrence of uropathogenic bacteria and their antimicrobial resistance profile. It’s cross sectional study. The study was conducted from January to April, 2018 in King Abdul Aziz Specialist Hospital and the Department of Clinical Laboratory Sciences, Jouf University, Sakaka, Saudi Arabia. A total number of 641 early morning clean catch midstream urine samples were collected from the patients with suspicion of UTIs and processed using routine microbiological techniques on CLED agar plates. We used MicroScan Walkaway plus System used final identification and in vitro antimicrobial resistance profile. We isolated 48 uropathogenic bacteria from 44 culture positive clinical samples of urine. The predominant isolates included 17 (35.4%) E. coli, 5 (10.4%) and Proteus mirabilis. The majority of Gram positive isolates were resistant to ampicillin and penicillin (87.5% each), ciprofloxacin and norfloxacin (81.3% each), cephalothin (62.5%) and amoxicillin-clavulanate (56.3%). The Gram negative isolates were more resistant to ampicillin (93.8%), tetracyclin and trimethoprim-sulfamethoxazole (68.8% each), aztreonam, cefuroxime and norfloxacin (62.5% each), cefepime, cetzidime and ciprofloxacin (56.3% each), gentamicin (50%) and levofloxacin (46.9%). We concluded that E. coli is still the main causative agents of UTIs. The best choice of antibiotics was vancomycin, teicoplanin and linezolid for Gram positive infections and imipenem, fosfomycin, piperacillin-tazobactam, meropenem, tigecycline and ertapenem for Gram negative pathogens.

Keywords
Drug Resistance, Urinary Tract Infection, Antimicrobial Sensitivity
EFFECT OF SUMO TAG ON EXPRESSION AND SOLUBILITY OF RECOMBINANT PROCHYMOSIN
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Abstract
Chymosin is an aspartic protease which is involved in milk coagulation and has great commercial value due to its role in cheese making. Chymosin is synthesized in its precursor form i.e. pre-prochymosin. The removal of 16 amino acid leader sequence from N-terminal converts it into prochymosin. At pH 4.5, further 42 N-terminal residues are removed through autocatalysis and active chymosin is produced. In this study, prochymosin cDNA from Bubalus bubalis was cloned because the most commonly used milk source is Buffalo in Pakistan. SUMO (small ubiquitin modifier protein) was used as N-terminal fusion tag for Buffalo prochymosin (SUMO-prochymosin) because literature supports its ability to enhance the expression and solubility of fusion partner. Another construct was made with 6 X-Histidine tag (His-SUMO-prochymosin) at the N-terminal of SUMO-prochymosin for facilitating the purification of recombinant protein. Effect of SUMO on expression and solubility of SUMO-prochymosin and His-SUMO-prochymosin was compared. It was revealed that SUMO-prochymosin and His-SUMO-prochymosin had significantly better expression as compared to native prochymosin. Expression was analyzed at various IPTG concentrations (0.001, 0.005, 0.008, 0.01, 0.05, 0.08, 0.1, 0.2, 0.4, 0.6 and 1mM) and temperature (16°C and 37°C) in BL21(RIL) CodonPlus. The optimum expression was obtained with 1mM IPTG as inducer at 37°C for 4 hours. All the proteins were expressed as inclusion bodies even at low IPTG concentration and low temperature (16°C). Though, only SUMO-tag was expressed in the soluble form even at 37°C indicating that it is properly refolded. Thus, attachment of SUMO fusion tag with prochymosin only enhanced the expression as compared to native prochymosin but did not help in soluble expression of protein. Further research will reveal whether SUMO-tag helps in in vitro refolding of its fusion partner or not.

Keywords
Buffalo Prochymosin, SUMO (Small Ubiquitin Modifier Protein), Fusion Tag, Cheese Making.
A RELATIVE INQUIRY OF SCRIPTURES OF QURAN AND BIBLE IN MODERN AGE OF SCIENCE & TECHNOLOGY

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Abstract
Since the leverage of Science and technology in 21st Century. No doubt, humans have reached at the acme of advancement but they have sidelined the real contribution of religions in the global community. In this context, the study investigates the Quranic and Biblical scriptures to comprehend the genuine meaning of Islam and Christianity and true purpose of Divine revelations. After 9/11 Islam has agonized and Muslims have lost faith on their religion. Further, the article sheds light that how few ruling elites are exploiting religious clout to confine human capital and extract natural resources. No doubt, modern expansion in science and technology has made people bold but on the flip side, it has created pessimism among people and preoccupied their minds considering it the ultimate reality. Conversely, this propagation is nothing but hidden motivation of a few ruling elite to diminish the true meaning of Islam and Christianity. The author has investigated Quranic and Biblical scriptures; which not only assisted author to scrutinize the primary source material but also helped to critically investigate the converse assumptions on Islam and Christianity that are existed in secondary narratives. Overall, the article endeavors to understand the worth of faith in modern age crafting strong connection between Christianity and Islam with the fresh stance. Hence, science and technology is not a distinctive phenomenon but it’s realities has been embedded in both religions. As Islam and Christianity believe on reason and curiosity than ensuing the blind worship of God.

Keywords
Christianity, Bible, Islam, Quran, Science, Technology, Scriptures.
INVESTIGATING THE ROLE OF STRESS-INDUCED LIGANDS IN INTESTINAL TUMORIGENESIS
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Abstract
NKG2D (natural killer group 2, member D) is an important activating receptor commonly found on immune cells such as natural killer cells in both humans and mice. Most studies have shown NKG2D as a tumour suppressor, yet recently its role in tumour progression specifically with regard to chronic inflammation has also been discovered. Colorectal cancer is a key example of inflammation-driven cancer with high fatality rate. In this study, we investigated the role of NKG2D using a mice model for Familial Adenomatous Polyposis (APCMin/+). This was done by quantitative analysis of NKG2D ligand RAE1 expression at both protein and transcript level. The immunohistochemical staining of RAE1 in APCMin/+ gut tissue (ileum) was optimized and protein expression was quantified for both, NKG2D sufficient and deficient mice. Further real-time polymerase chain reaction was performed and similar RAE1 transcript expression was observed for both tumour (NKG2D sufficient and deficient) and non-neoplastic gut tissue. However, RAE1 protein expression was higher in NKG2D deficient mice, suggesting NKG2D dependent immunoediting in APCMin/+ mice models. A possible induction of pro-inflammatory milieu could be hypothesized leading to decreased survival of NKG2D proficient mice. Moreover, RAE1 expression decreased with tumour size, suggesting possible shedding of RAE1 with tumour progression. This study emphasizes the importance of understanding the coalition of immunoreceptor NKG2D and its ligands prior to aiming at NKG2D based immunotherapies.

Keywords
Nkg2d Receptor, Rae1 Ligand, Familial Adenomatous Polyposis, Immunohistochemical Staining, Immunoediting.
EXPRESSION AND PURIFICATION OF RECOMBINANT BUFFALO PROCHYMOSIN USING pelB LEADER SEQUENCE AND 6X HISTIDINE TAG
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Abstract
Chymosin, an aspartyl protease can be extracted from abomasum of suckling calf. Chymosin acts as milk clotting agent and plays major role in cheese manufacturing. Pakistan has excess of milk production but it is least marketable enterprise due to lack of suitable planning in collection, conveyance and delivery chains. Across the World, Pakistan has been ranked number two in buffalo milk production which is about 73\% of the total milk produced in our country. With the increase of population and increasing demand of cheese industry, the calf rennet supply is decreasing. So it is of great importance to produce recombinant buffalo prochymosin that can convert the buffalo milk to cheese in high yield. The pET22b expression vector was used to express recombinant prochymosin. The protein was fused with pelB leader sequence at N-terminal which promotes movement of protein to periplasm of bacteria and 6X histidine tag at C-terminal to enable protein purification through Immobilized Metal Affinity Chromatography (IMAC) using Nickel column. Optimum soluble expression of pelB-His-Prochymosin was obtained in Rosetta-gami expression host cells with 0.5mM and 1mM lactose at 25\(^\circ\)C temperature for overnight. Clarified cell lysate after sonication was subjected to HisTrap FF crude 1ml column for one step purification and bound pelB-His-Prochymosin was eluted by stepwise gradient elution with different imidazole concentrations (100mM, 200mM, 300mM and 500mM). pelB-His-Prochymosin was eluted at 300mM and 500mM imidazole concentrations. Purified pelB-His-Prochymosin was converted to its active form i.e. Chymosin by acid autocatalysis at pH 4.5. Milk clotting Assay of purified and activated Chymosin was 125U/ml that showed promising results.

Keywords
Pelb-His-Prochymosin, Pet22b Expression Vector, Milk Clotting Assay, Recombinant Buffalo Prochymosin.
ANTIBACTERIAL ACTIVITY OF POMEGRANATE RIND EXTRACT
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Abstract
In recent years, there is a considerable interest in food preservation and extending its shelf life. To check the antibacterial activity extract was added at different concentration (1, 5, 10 and 20%). The agar diffusion method was used for determining the antibacterial effects of extracts on bacterial strain (Listeria monocytogenes and Salmonella typhimurium). Disc containing 1% extract or less had no effect on L. monocytogenes and S. typhimurium, when the concentration of extract in disc was increased to 5% and more a clear inhibitory zone by the absence of bacterial growth was observed. As the concentration increased, the zone of inhibition also increased significantly (p<0.05). The greatest zone of inhibition was observed at 20% level against S. typhimurium and the smallest zone was observed at 5% level against L. monocytogenes (p<0.05). We also used orange peels extract with same pattern and we observed no such antibacterial activity.

Keywords
Diffusion, L. Monocytogenes, Salmonella Typhimurium.
EVALUATION OF BIOLOGICAL ACTIVITIES AND GC-MS ANALYSIS OF ACETONE EXTRACT OF CANNABIS SEEDS
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Abstract
Cannabis is a dioecious herb of the Cannabaceae family. It is native to Pakistan’s wild flora and is amongst the most commonly used drugs in the region. It was a known choice for its therapeutic application in the past. The present study followed the sequential extraction of Cannabis seeds using four solvents hexane, acetone, methanol and distilled water by soxhlet apparatus. The acetone extract was then screened for eleven phytochemicals out of which the five detected were phenols, quinones, sterols and terpenoids, tannins and proteins. 71.4 ± 1.14 mg GAE/g of phenolic content was found in the extract. Well diffusion assay was employed to screen the extract for its antibacterial potential against Acinetobacter spp., Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Pseudomonas spp., Proteus mirabilis, Proteus vulgaris and Staphylococcus aureus. The extract was found to be active against all tested strains. It was most effective against Acinetobacter forming a zone of inhibition with a diameter of 13 ± 0 mm and least effective against Pseudomonas aeruginosa forming a zone of diameter 9 ± 1.41mm. Acetone extract also had weak antioxidant potential as determined by DNA damage protection assay. GC-MS analysis detected different compounds in the acetone extract. like 5-Isopropyl-2,2,7a-trimethylhexahydrobenzo[1,3]dioxol-4-ol, 1,3-Benzenediol,2-[3-methyl-6-(1-methylethenyl)-2-cyclohexen-1-yl]-5-pentyl-, (1R-trans)- and 1,2-Benzenedicarboxylic acid, mono(2-ethylhexyl) ester out of which 1,2-Benzenedicarboxylic acid, mono(2-ethylhexyl) ester was the most abundant. The detected compounds may possess antibacterial potential and can be isolated and developed further as potential drugs.

Keywords
Cannabis, Antimicrobial Activity, Serial Exhaustive Extraction, Total Phenolic Content, GC-MS.
LATEST TECHNOLOGIES TO ACHIEVE ZERO DISCHARGE OF HAZARDOUS CHEMICALS (ZDHC) IN TEXTILE WASTEWATER TREATMENT

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Abstract
Textile industry is contributing a decent proportion in the annual exports of Pakistan. With increasing number of industries, the environmental concerns of untreated wastewater discharge increase correspondingly. Brands/buyers for which Pakistan is manufacturing different textile products; are also becoming environmentally conscious and have asked the manufacturers to achieve Zero Discharge of Hazardous Chemicals (ZDHC). Without compliance of ZDHC it is very difficult to get business from the international buyers. With conventional biological treatment methods this is difficult to achieve ZDHC, therefore, latest technologies are developed and applied. The current work gives a review of such techniques available and establishes a systematic approach to select different technologies for achieving various levels of ZDHC.

Keywords
Textile Wastewater; Zero Discharge; Biological Treatment; Membrane Filtration.
DETERMINATION OF ANTIOXIDANT ACTIVITY AND PHYTOCHEMICAL ANALYSIS OF FRUIT AND LEAF EXTRACTS OF SYZYGIUM CUMINI

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Abstract

*Syzygium cumini* is a prominent fruit plant which is extensively being used in the field of research relative to medicinal, antimicrobial and antioxidant properties. Various parts of the plant are involved in the treatment of diseases like diabetes, diarrhea, asthma, arthritis and heart diseases. However, the extent of medicinal efficacy may differ on the extraction methods and the type of solvent extract. The study undertaken involved the ethanolic and aqueous extracts of leaf and fruit samples of the plant, which were screened for the presence of phytochemicals and were further analyzed for the antioxidant activity using DPPH method. The results obtained showed presence of many phytochemicals most prominently phenols, tannins, terpenoids, carbohydrates etc while others showed minimum to negligible quantities. Antioxidant activity of the fruit extracts (ethanolic and aqueous) presented higher scavenging properties as compared to the leaf extracts. The results were further presented in the form of tables and graphs. The outcome of the present research will be helpful for determining that ethanolic extracts of *Syzygium cumini* have better effects on human health than aqueous extracts, which can further be used for therapeutic purposes.

Keywords

*Syzygium Cumini*, Phytochemicals, Antioxidant Activity, DPPH, Ethanolic Extract
BIOCHEMICAL CHARACTERIZATION AND THERMODYNAMIC ANALYSIS OF GH12 ENDO-1,4-B-GLUCANASE CLONED FROM THERMOTOGA NAPHTHOPHILA RKU-10T IN A MESOPHILIC HOST

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Abstract
Energy crisis are the leading economic constrains in developed as well as in developing countries. With the exhaustion of nonrenewable resources at an exponential rate, the need to develop alternative renewable energy sources (bioenergy) which can be both cost effective, environmental friendly and high in yield, is the need of time. Recently, the increasing demand of energy has strongly stimulated the research on conversion of lignocellulosic plant biomass by the action of cellulases enzymes into reducing sugars, for the subsequent production of bioethanol. Endoglucanases are mainly responsible for hydrolyzing the internal glycosidic bond to decrease the length of the cellulose chains. Obtaining efficient and thermostable endoglucanase has become the goal of much research worldwide. Therefore, our research work was focus to search for new resources of endoglucanases, which was thermostable and with high catalytic efficiency. The present research focuses on the thermotolerant endo-1,4-β-glucanase gene, of Thermotoga napthophila RKU-10T, was cloned and over-expressed in E. coli strain BL21 CodonPlus for its potential usage for the hydrolysis of lignocellulosic biomass and in different industrial applications. Thermostable endoglucanase can be used simultaneously and directly in the saccharification procedure without a pre-cooling process of biomass. Purified enzyme was optimally active with 636 U mg\(^{-1}\) of specific activity against CMC at pH 6.0 and 95°C, and stable up to 8 h at 85°C. Its thermostability, resistance to heavy metal ions and high specific activity make endoglucanase a potential and promising candidate for various industrial applications such as in textile industry (in biostoning and biofinishing), in animal feed production, in processing of beer and fruit juice, in biomass hydrolysis (bioethanol production) and in plant oil, detergent, pulp and paper industry.

Keywords
Denaturation, Kinetics, Thermodynamics, Thermostability, Thermotoga Naphthophila
RP-HPLC AND MASS SPECTROMETRIC ANALYSIS TO EVALUATE PROPER *INVITRO* REFOLDING OF PROINSULIN AND CONVERSION TO INSULIN

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**Abstract**

Diabetes Mellitus has been treated for a long time by supplementing the patient with animal insulin and then swapped by recombinant human insulin. Buffalo proinsulin cDNA was cloned in pET21a vector and expressed in BL21–CodonPlus(DE3)–RIL cells using shake flask method inducing with 0.4 mM lactose and grown for 6 h at 37°C. The resulting M–proinsulin containing extra N-terminal methionine was produced as inclusion bodies which were solubilized in 8 M buffered urea, pH 8.0 containing 2mM DTT and refolded in the refolding buffer containing 2 M urea, cysteine and cysteine at 4 °C followed by dialysis and acid precipitation. The refolded and partially purified M–proinsulin was then subjected to RP–HPLC and collected peaks were analyzed on MALD–TOF. It is interesting to note that within an experimental error of ± 2 Da, all the four fractions (peaks 2-5), though showing different elution pattern, had similar molecular mass corresponding to the mass of M–proinsulin (8812.0). Peak 1 gave a molecular mass of 8829.52, which may be a methionine oxidized form of M–proinsulin. In order to know whether the small difference in molecular mass is only an experimental error or these species contain some unoxidized –SH groups, the four species were alkylated with iodoacetamide and subjected to MALDI – TOF. But all the alkylated samples gave the molecular mass around 8812 which means there is no alkylation of any of the species and that all the six cysteines in different M–proinsulin species (isomers) are involved in the disulfide bonds. So it was assumed that these species of M–proinsulin may contain different refolding patterns due to the formation of various combinations of three native disulfide bonds *i.e*; A6 – A11, A7 – B7 and A19 – B20. The results gathered after tryptic digestion and MALDI-TOF analysis of these peaks, it was concluded that monomeric form of M–proinsulin is a mixture of differently refolded isomers that give different products after tryptic digestion. However, the main species is the correctly folded M–proinsulin eluting in peak 2.

**Keywords**

Proinsulin, MALDI-TOF, Insulin, *In Vitro* Refolding, RP-HPLC.
ANALYSIS OF ON-RESISTANCE IN NORMALLY-OFF 4H-SiC VERTICAL JUNCTION FIELD EFFECT TRANSISTOR

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Abstract
2D numerical simulation of normally-off 4H-SiC VJFET is performed by varying different parameters including temperature (300-600 K), channel width (0.85 μm, 1.05 μm and 1.25 μm) and gate voltage using TCAD numerical simulator. Main concern is the reliability of SiC VJFET under high temperature and high electric field. In this report, we focus on temperature dependent output characteristics with different channel widths and gate voltages. In forward characteristic mode, excellent temperature behavior is observed and simulation results show that the forward current increases from 1.14 A (300 K) to 5.43 A (600 K) at channel width 1.25 μm with gate voltage 3.0 V. We have observed that the forward current increases with increasing channel width and the gate voltage influences forward saturation current. We report the specific on-resistance of 2.012 mΩ.cm\textsuperscript{2}, based on 10 μm drift layer, doped to 7 x 10\textsuperscript{15} cm\textsuperscript{-3}. Under varying gate voltages and temperatures, unipolar and bipolar mode of operation is studied. The leakage current is observed in the range of nA at temperature 300 K and increases in the range of μA at temperature 600 K. A high value of 751 MW/cm\textsuperscript{2} for the figure of merit (FOM = \(\frac{V_B^2}{R_{sp-on}}\)) is achieved.

Keywords

Kinnaird’s 1st International Conference on ‘Science, Technology and Innovation’
SERUM VITAMIN D IN WOMEN WITH PRE AND POST MENOPAUSAL NEWLY DIAGNOSED BREAST CANCER IN PAKISTAN
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Abstract
A large population of Pakistan is suffering from vitamin D deficiency. Decreased levels of vitamin D are associated with many critical diseases. In Pakistan, breast cancer incidence is on the rise especially among young women. Vitamin D anti-carcinogenic effects are known to protect from breast cancer. This study determined serum vitamin D level in newly diagnosed breast cancer and healthy premenopausal and postmenopausal women and to evaluate its association with age groups, menopausal status, body mass index, grade, stage, size of tumor and serum calcium level. The study included 300 newly diagnosed breast cancer women visiting INMOL and 300 age-matched healthy women from different areas of Punjab province. Blood samples were collected and serum vitamin D and calcium levels were estimated. The mean±SD vitamin D levels in patients and control group were 11.4±6.1 and 23.8±5.8ng/ml respectively (p<0.001). Pre and postmenopausal breast cancer women had mean vitamin D levels 10.6±4.2 and 12.6±7.5ng/ml respectively (p<0.001). No significant association of tumor grade and stage whereas a significant association (p<0.001) of tumor size with low vitamin D levels among breast cancer patients was found. A significant association was also found between low vitamin D and high calcium levels among pre and post-menopausal breast cancer women (p<0.001) and high calcium levels with increased tumor size p<0.001. The study showed severe vitamin D deficiency in breast cancer women which must be appropriately managed because it may lead to tumor aggressiveness, poor prognosis of disease and other related complications.

Keywords
Breast Cancer, Menopausal Status, Tumor Stage And Size, Vitamin D Deficiency, Calcium Status.
SINGLE PHOTON TRAPPING BY RYDBERG ATOMS FOR SPIN ELECTRONICS’ APPLICATIONS

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Abstract
This study is a review of the increasing significance of Photon trapping and the applications of Spin electronics such as Quantum Computation, which takes in both the half spins of electrons to satisfy the ON and OFF stage for computer programming and Super Radiance, which is advanced and more energetic LASER. With the aid of Rydberg Atoms, that are highly energized beings with electrons excited to an nth shell (where n ≤ 100), accomplishment of desirable applications have been predicted and achieved to quite an extent. Since these Rydberg Atoms are large in size and tend to de-excite at lower energy levels rather quickly, it is a challenge to confine them through experimentation in laboratories since their natural existence is only known to be in outer space with the adequate conditions suitable for their lifetime maintenance. Their properties of large dipole moments, size large enough to be observed at a microscopic level, the Sensitivity of Stark effect at high energy levels and the direct relation of radiative lifetimes with the Principle Quantum number have seemed to play a vital role in the intended studies of Photon Trapping. The assemblies of these Rydberg atoms were cooled down for the purpose of slowing their velocity and reducing their Kinetic Energies which eventually leads to their efficient handling and usage. The key experiment reviewed in this study includes a Cavity Quantum Electrodynamics that is comprised of highly reflecting mirrors which have experimentally trapped a single photon. This execution has theoretically proved effective in the fabrication of Quantum Computers via electron manipulation.

Keywords
Rydberg Atoms, Photon Trapping, Quantum Computation, Magneto-Optical Trap, Superradiance.
PERCEPTION OF CHEMISTRY TEACHERS ABOUT THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES FOR THE CONDUCTION OF PRACTICALS AT SECONDARY LEVEL

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Abstract
The study aimed to find out the perceptions of chemistry teachers about the application of ICTs for conducting Chemistry practicals at secondary school level. The researchers selected four male and four female chemistry teachers as participants by means of purposive sampling. Focus group discussion was conducted to gather the data from the teachers. There was a difference of opinion among teachers about the application of ICTs for the conduction of practicals at secondary school level. Most of the teachers recommended to supplement the laboratory work with ICTs. Few teachers stressed on strengthening the status of chemistry laboratory rather than linking it with ICTs. One of the participants’ female teachers completely rejected the idea by focusing that practical work is based on skills that required first hand experience. Furthermore, they have shown their concern about the availability of ICTs in all secondary schools.

Keywords
Chemistry, ICTs, Focus Group, Use Of ICT, Chemistry Practical, Teachers, Secondary Level.
CHARACTERIZATION OF NAM/CUC3-RELATED GENES FROM OIL PALM (ELAEIS GUINEENSIS) AND FACTORS REGULATING THEIR EXPRESSION DURING IN PLANTA AND IN VITRO DEVELOPMENT

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Abstract

Plant development depends on functioning of meristems, which are responsible for organ production during the post-embryonic phase. Development depends also on the definition of boundaries not only between meristem and primordia but also between organs. NAM/CUC3 genes, which code for proteins of the NAC domain transcription factor family, and their microRNA regulator miR164 play an important role in these mechanisms in eudicot species. In addition to their role in boundary definition, they are involved in the establishment of the shoot apical meristem during embryogenesis and in the control of plant and organ architectures. On the basis of data from eudicot species, the conservation and regulation of these genes and their involvement in meristem functioning in palms (Arecales, Arecaceae) as well as in monocots as a whole was still an open question. In this context, three NAM/CUC3-related genes were isolated from oil palm (Elaeis guineensis L.), EgNAM1, EgNAM2 and EgCUC3. These genes are expressed in both vegetative and reproductive meristematic tissues. The analyses performed revealed the conservation of the NAM-miR164 regulatory module in this species and a divergence in terms of expression pattern between monocots and eudicots, which may be related to differences in the cis-regulatory regions of the NAM genes. In contrast, the expression patterns of NAM/CUC3 genes during somatic embryogenesis indicate similarity in the timing of expression between oil palm, maize and rice and also a conservation of the auxin-dependent regulation of NAM genes during this developmental phase as observed in Arabidopsis thaliana. Nevertheless, even if miR164-dependent post-transcriptional regulation of NAM genes was detected during somatic embryogenesis, auxin-dependent repression seems to be essentially through transcriptional regulation.

Keywords

Oil Palm, Meristem, Embryogenesis, Mir164, NAM/CUC3
RELATIONSHIP OF LIVER ENZYMES WITH VIRAL LOAD OF HEPATITIS C IN HCV INFECTED PATIENTS BY DATA ANALYTICS
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Abstract
Correlation of liver enzyme with viral load of HCV has been previously questioned. Based on previous findings this study was aimed to appraise relationship of liver chemistry with HCV RNA titer and also to assess relationship of liver enzymes with liver morphology detected on ultrasound. And for this purpose data analytics were first time used to evaluate relationships. For this purpose, 155 serum samples were recruited from different hepatic centers of Lahore. Liver enzymes ALT, AST, ALP and serum bilirubin was measured by photometric method on Beckman coulter. Liver morphology was noted by ultrasound. Viral load of HCV was detected by Real time polymerase chain reaction. Relationship of liver enzymes and bilirubin with viral load and with liver morphology was observed by making UCINET graphs. Results of this study indicate that alkaline amino transferase (ALT) level, aspartate amino transferase (AST) level and alkaline phosphates (ALP) are significantly correlated with viral load of HCV RNA while biochemical test bilirubin is not. A significant relationship of liver enzymes was observed with liver morphology. Genotype 3a was the most abundant genotype of HCV in this population. Elevated levels of liver enzymes significantly depict viral load in infected patients of HCV. Findings of this study suggest another prospective study with a large population.

Keywords
Hepatic, Hepatitis Virus, Liver Markers, UCINET Analysis.
METHODS AND TECHNIQUES IN MENTAL MATHS TO ENHANCE THE THINKING POWER
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Abstract
Mental Math is all about the calculations that we do in our mind without the use of pen, paper or calculator. This research paper determines the methods and techniques of Mental Math and the interpretation of the related algorithms. After analyzing the algorithms, the researcher managed to find some interesting techniques in order to speed up the thinking power. The study focuses on extension and then further extension of the techniques. The research on Mental Math has been conducted, by keeping in mind its importance in our lives. It is that tool which enhances one’s self-reliance. The learning and understanding of the methods and techniques of Mental Math reduces over dependence on calculators. This exploration will ultimately empower students who are lacking in this amazing part of Mathematics. Mental Math not only stimulates the thinking process but also helps in the better understanding of the number system. A mathematical method can easily be understood if it is explained in terms of an algorithm, followed by an example and then generalizing the result. In this paper, the researcher will focus on the extension of magic of 1089 and the further extension of the number.

Keywords
Mental Math, Algorithm, Extension.
QUINOA: COMPLETE PROTEIN AND FANTASTIC WHEAT-FREE ALTERNATIVE
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Abstract
Quinoa (Chenopodium quinoa), an annual flowering plant producing seed belongs to Amaranthaceae family, grown as a grain crop. It is, in fact, pseudo cereal, a seed prepared and eaten like a grain, originally cultivated in the Andean region. The seeds are oblate, oval, and usually pale yellow, but the color may vary from pink to black, and the taste may vary from bitter to sweet. According to the Whole Grains Council the most commercialized types are white, red and black quinoa. The requirement for quinoa has risen potently in recent years. It contains great amount of nutrients and often called as “superfood.” It can definitely be a healthy addition to the diet, being extremely nutritious and opulent in many minerals like iron, magnesium and plant compounds. Quinoa is affluent in protein, B vitamin, dietary fibre, and dietary minerals in amounts higher than in many grains. Quinoa has a nutty flavor and crunchy texture. It is also gluten-free, so it can be enjoyed by people such as those with celiac disease, who are sensitive to gluten or wheat. One cooked (185 grams) contains 222 calories. It is good source of antioxidant and minerals but bitter quinoa varieties. Quinoa contains quercetin content which show anti-inflammatory, Anti-cancer and Anti-depressed effects. It is High fiber content which fights constipation and very high in protein, with all the nine essential amino acids. Beneficial effects on metabolic health and easy to incorporate into your diet. A study revealed that quinoa had the greater antioxidant content of 10 cereals, pseudo cereals and legumes. A study concluded that Quinoa abate most of the detrimental effect caused by the fructose, all of which are linked with type 2 diabetes. It reduces blood sugar levels by 10%, triglycerides by 11% and blood cholesterol by 26%. Quinoa has a lot of properties to make it a weight loss friendly food. To increase your diet’s nutrient content, it may be a good start to replace other grains such as rice or wheat with quinoa.

Keywords
Quinoa; Pseudo Cereal; Superfood; Celiac Disease; Quercetin.
GENETIC ASSOCIATION ANALYSIS OF HUMAN NEURONAL DEVELOPMENTAL CONTROL GENES PLAYING ROLE IN AGGRESSION AMONG THALASSEMIC PATIENTS
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Abstract
Thalassemia is a type of genetic disease that involves the formation of hemoglobin abnormally. Aggressive behavior has two basic components environmental and genetic. To find out the genetic factors that are responsible in aggressive behaviors of human various studies have been performed. Aggressive and depressive behavior is quite common in thalassemia patients. To assess genetic association of Thalassemia with aggression and depression gene-gene interaction of Mono Amine Oxidase A gene (MAOA uVNTR) and 5-Hydroxytryptamine length polymorphic region (5-HTTLPR) in Thalassemia was observed to compare controls and Thalassemic patients on the basis of MAOA uVNTR and 5-HTTLPR. Blood samples were collected from thalassemia patients and healthy persons. DNA was extracted and amplified through reported primers. MAOA uVNTR and 5-HTTLPR were genotyped. A comparison was done among the thalassemia patients and control groups on the basis of length of alleles and allele types were compared for anti-social personality disorders. Significant relationship was seen among thalassemic patients and MAOA uVNTR, 5-HTTLPR allele types.
IN SITU SYNTHESIS, ENCAPSULATION IN ARABINOXYLAN AND RELEASE KINETICS OF MICROCRYSTALLINE COPPER (II)-ASPIRINATE

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Abstract
Microencapsulation is a technique of packing an active component inside a shell ranging in size from one micron to several millimeters. Microcrystalline copper(II)-aspirinate was synthesized in situ by allowing copper(II) acetate monohydrate and aspirin to react in pre-swollen arabinoxylan (AX) from Plantago ovata husk in aqueous medium. The method resulted in formation of microcrystalline (< 40 mm) copper (II)-aspirinate dispersed in AX matrix. The product was characterized by microscopic FT-IR spectroscopy, pXRD, scanning electron microscopy and atomic force microscopy. The AX-encapsulated copper(II)-aspirinate exhibited a smooth release profile of aspirin over 8 h following Korsmeyer-Peppas model for swellable polymer films in alkaline medium. The release was of Fickian type with $n = 0.5$. The release rate appeared to follow the order: alkaline pH > distilled water > acidic pH suggesting the pH-dependent release from AX. These profiles were highly sustained as compared with those of the naked drug. Thus the AX-encapsulated copper(II)-aspirinate is expected to be a good candidate for evaluation as a slow-release device for delivering aspirin in the intestine. The advantages linked with this product are: the arabinoxylan used in it is more biocompatible than the cellulose-based materials being currently used, and augmented anti-inflammatory effect of copper in combination with aspirin.

Keywords
Microencapsulation, Copper(II)-Aspirinate, Arabinoxylan.
SUGARCANE (SACCHARUM OFFICINARUM L.) JUICE AS A FUNCTIONAL DRINK
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Abstract
Sugarcane juice is known as delicious dessert drink and widely consumed by people of subtropical and tropical regions. As profound source of vitamins, minerals, protein, fiber, phenolics, flavonoids and antioxidants, it can be used in medicinal system. It can also provide health promoting effects such as prevention of cancer, stabilization of blood sugar levels, potential to fight against the tooth decay, reduction of fever and seizures, improvements in kidney function and enhancement of immunity. On basis of natural composite, natural sugarcane juice can an outstanding substitute for sugar and can be consider as effective remedy for jaundice, as well as body moisture, anti-bacterial agent, cancer defensive and energy boaster. So, it can be recommended to make a habit to eat a piece of sugarcane or drink one glass of its juice after each meal. Drinking also boosts energy, so you will stay up all day without feeling tired.

Keywords
Phytochemicals, Antioxidant, Sugarcane, Bagasse, Staphylococcus Aureus.
A STUDY OF THE RELATIONSHIP AMONG AGGRESSIVE BEHAVIOR, INTELLIGENCE AND EMOTIONAL INTELLIGENCE OF STUDENTS OF GRADE 5
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Abstract
Aggression is commonly known as the behavior that intends to harm others, wherever, intelligence is whatever we perceive in our mind and emotional intelligence is to monitor and maintain our emotions. The main goal of the study was to find out the relationship among these three variables for the children of grade 5. For this purpose, the researchers selected 80 aggressive students of grade 5 from both public and private sectors of Lahore, all the students were selected through peer nomination. Three instruments for measuring the above-mentioned variables were used; the first one was a self-constructed checklist for measuring aggressive behavior of the students, the second one was a standardized IQ test (Raven’s Progressive Matrices) and the third one was also a standardized emotional intelligence test Teique-AS. The nature of the study was quantitative and correlational method was used. The data was analyzed by using Pearson Product Moment coefficient and the results showed that there was a significant negative moderate relationship (r = -.342, at p = .002), between aggression and intelligence. Likewise, there was a significant negative strong relationship (r = -.928, at p = .000), between aggression and emotional intelligence and finally the results determined a significant positive low relationship (r = .286, at p = .010), between intelligence and emotional intelligence of children of grade five (approximately 10 years old). The study has strong implications for developing emotional intelligence at primary level to cope with aggressive behavior and for appropriate intelligence development.

Keywords
Aggression, Intelligence, Emotional Intelligence
ANOTHER SIDE OF ADVANCED TECHNOLOGY; SELFIE ADDICTION AND PERSONALITY TRAITS

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Abstract
Selfie is a photo of yourself that you take, typically with a Smartphone/ webcam. Smartphone has intruded in our life so much that without which we cannot survive. The appeal of Selfie comes from how easy they are to create and share and the control it give to the photographer. The term Selfie was officially named by an oxford English Dictionary in 2003. American Psychiatric Association suggests that taking so many Selfies could indicate Mental Disorder.(Singh & Tripathi, 2016) This research is aimed to find the relationship between big five personality factors and selfie addiction. Data were collected from young adults (25 to 40 years). Correlation analysis and regression analysis was used to find results. Finding supports the assumptions that personality traits significantly related to selfie addiction. This study will help in the field of psychology and advanced technology as this is a study which revealed another side of advanced technology.

Keywords
Selfie Addiction, Personality Traits.
ENERGY EFFICIENT FUZZY LOGIC BASED CLUSTERING ALGORITHM IN WIRELESS SENSOR NETWORKS

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Abstract
A Wireless Sensor Network (WSN) consists of tiny sensor nodes that are used to collect and transmit large amount of data from the environment. These sensor nodes have limited processing power and battery lifetime. WSNs are used in many real time applications and their network lifetime depends greatly on the amount of energy consumed. That is why effective energy consumption is one of the greatest challenge in WSN. For this reason researchers focus mainly on proposing algorithms that are energy-efficient. Clustering is the one of the most famous and widely used technique to preserve the energy consumption in WSN. Many routing protocols for WSN are based on this technique. The two main functions of the clustering algorithm is the cluster formation and cluster head (CH) selection. CH selection is an important process and greatly impacts the energy consumed and the network lifespan. The parameters on which cluster heads are selected, has introduced a problem of ‘unbalanced energy’ as those CHs may be selected whose residual energy is less than that of the other nodes. In this paper, we will discuss clustering algorithm based on fuzzy logic using three fuzzy parameters: energy, distance and centrality. These techniques overpower others because of its ability to transform multiple inputs into a single output and also because of its skill of imitating human decision making. The simulations results prove that our proposed method is better from other techniques in terms of energy efficiency and network lifespan.

Keywords


HURDLE TECHNOLOGY IN FOOD PRESERVATION
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Abstract
Today’s concern is in the direction of minimum harmed food product with maximum protection of food to microorganisms. Consumers require fresher and more natural products. This prompts food manufacturers to use milder preservation techniques and could be motivating the recent trend to hurdle technology. Hurdle technology is used in food industry for the gentle but effective preservation of foods. Hurdle, is a new model for the production of safe, stable, nutritious, full of flavor and economical foods. The quick purpose of hurdle technology has become more established now because the principle of major preservation factors for food (e.g. temperature, pH, water activity competitive flora), and their interactions, become better known. The hurdle technology makes minimum sensory and nutritional changes in the product and suitable than traditional methods of preservation.
E-LEARNING & EARNING ONLINE USING KNOWLEDGE ENGINEERING (E-LEO)
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Abstract
Things have become fast and reached a distance of our fingertips. Quizzes and assignment tasks that once used to be manual and in hard form are now visualized and have simply entered our devices screens. Therefore, the System “E-LEO” finds a way to generate any sort of questions automatically from provided source either (PDF) books or simply any keyword against a user needs to perform a test. In the case of searching through a Keyword online, usually Systems scrap all the text from Wikipedia and convert it into multiple choice questions. Here, E-LEO comes with a methodology to summarize raw text from Wikipedia and also parse the text from provided content to generate MCQS. The System finds all the Named Entities and POS (Parts of speech tags) in the content to create relevant questions. The questions include MCQs, Cloze based questions and WH- questions (why, where, when etc.). E-LEO would allow the users to perform test online against their selected topic or provided book and also would help them to learn by providing helping material in the weak knowledge area of the users after analyzing the test that users have performed. Furthermore, users would score standard points in the test to qualify for earning zone where they can earn money ($ Dollars) for scoring points in each test. The Income comes from AdSense applied on website and other Local ads, Affiliating marketing and advertisements. The Web-Traffic would be the key to Success.

Keywords
Natural Language Processing, Artificial Intelligence, Ontology, Sematic Role Labelling, Machine Learning, Automation, Wikipedia Scraping, Text Mining, Text Summarization, Knowledge Engineering, Mcqs Generation, Quiz Generation, Online Learning System.
LIPID PROFILING OF AUTOMOBILE WORKERS TO SCREEN CARDIOVASCULAR RISK FACTORS

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Abstract
Cardiovascular diseases are the one of the leading cause of disability and premature death worldwide that will constitute major health problems in Pakistan. Automobile workers are daily exposed to harmful chemicals which are hazardous to their health. Exposure to fumes, drugs, gases, solvents, carbon monoxide, heavy metals and lead in automobile workplaces can cause occupational cardiovascular disorders in automobile workers. This research is directed to analyze the relationship between the lipid profile and the risk of cardiovascular disease in automobile workers. It will indirectly promote the awareness of using environmental friendly products and opting healthier options. The research is being conducted in different automobile workshops of Lahore on 100 male subjects who work there as battery manufactures, technician, mechanics, repairers and panel beaters and has great exposure to lead, chemical and toxic fumes. The lipid profile tests of male subjects are being performed in order to examine the risk of cardiovascular disease. The results of the performed tests until now has shown high triglycerides level, low level of high density lipoprotein, high level of low density lipoprotein and high level of cholesterol which indicates the abnormal result of lipid profile in automobile subjects. The change of lipid profile of automobile workers from normal range directs the risk of getting cardiovascular diseases. The results obtained through testing showed the direct relationship between lipid profile of automobile workers and cardiovascular risk factors and it concludes that the deviation of lipids level in automobile workers from normal range increases the susceptibility of cardiovascular diseases.

Keywords
METADATA AND ITS IMPACTS ON NATIONAL SECURITY AGENCIES
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Abstract
The collection of information has been based on “covert intelligence means”, but now it is done by the modern state of the art technological means and being stored in a repository, known as “metadata”. Metadata is being used for surveillance, assassinations in fifth generation warfare. Provisioning security on metadata is the primary concern when metadata is used. During transferring and sharing data, Security agencies are more pertained on improving metadata security. Current study aims to educate about the tools of security agencies working against us as enemies in disguise of a friends. However, a critical analysis on the usages of metadata has been performed in order to further understand “generations’ warfare” against the future of our generations. Consequently, the conducted critical analysis and recommendations are the promising in provisioning security for metadata as well as perspective agencies.

Keywords
Cyber Wars, National Security Agency, Metadata, Covert Intelligence.
NUTRITIONAL ASSESSMENT OF JANITORIAL STAFF OF UNIVERSITIES OF LAHORE
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Abstract
A descriptive study focused on assessing the nutritional status of janitorial staff belonging to low socio-economic class was carried out in different universities of Lahore. The universities included were Kinnaird College for Women, Punjab University and Government College University, Lahore. A questionnaire was used as a tool for data collection which comprised of three sections that were anthropometric measurements, clinical signs and symptoms and daily dietary intake. The anthropometric measurements were recorded along with the clinical signs and symptoms that indicated the vitamin, mineral, and macronutrient deficiencies within the respective population. The results of the study found that data collected from Kinnaird College showed that 13% individuals were overweight, 7.66% had normal weight while 7% were underweight. Whereas in Government College University 17.6% were overweight, 9.33% were normal weight and 9.6% were underweight. In Punjab University 19.66% were overweight, 12.33% were normal weight and 9.6% were underweight. Clinical assessment was analyzed by counting the signs and symptoms of vitamin and mineral deficiencies. According to the data obtained and analyzed no respondent had severe protein deficiency only 1% was suffering from moderate protein deficiency. Mild deficiencies of vitamin B9 and B12 were most prevalent among the respondents of Educational Institutes. Respondents (5.70%) from Government College University and Punjab University had moderate vitamin A deficiency whereas on average of all the three universities only 3% of the respondents had severe vitamin D deficiency.

Keywords
Nutritional Assessment, Anthropometric Measurements, Food Guide Pyramid
Abstract
Quantum Computing (QC) is the game changer and there are a number of significant opportunities of QC in aerospace and quantum computing is taking off in aerospace industry. Atoms are used in QC instead of transistors for processing. Software systems in aerospace are highly critical for safety and developed heavily controlled and specialized. Verification and Validation (V&V) is the main problem in development of computational intensive systems, like aviation system, and it is very complex, time taking and expensive process; QC can help to optimize V&V process. Now a days, aerodynamic problems like efficiently solving Partial Differential Equations (PDEs), optimizations for traffic flow, aircraft loading and climbing, simulations of Computational Fluid Dynamics (CFD) for aircraft, and wing-box design for airframe loads, mass modelling and balancing etc.; are the main challenges in aerospace industry. Researchers and professionals are trying to solve these problems using QC to enhance the lifecycle of aircrafts by composite optimizations and amendments. Furthermore, Global Positioning System (GPS), navigation guidance, and remote sensing are the core applications in space. Since, QC based systems are intended to be used as the replacement of HPC (High Performance Computing) systems in future. D-Wave 2000Q is a 2000 qubits QC hardware machine, Airbus is using this machine in their aerospace systems for applied QC base solutions to identify the failures that can lead to the safety critical events by using Fault Tree Analyses (FTA). As results of this technique are promising in the business of Airbus and the company is inspired to continue research on QC based solutions because of FTA results and planning to start more QC based project. In this research, we present some CFD based optimizations and solutions for time critical tasks using QC, as CFD is an integral part of internal and external design and optimization aerodynamics. Furthermore, CFD also required huge computational power to solve PDEs.

Keywords
Aerospace, Quantum Computing, Aerodynamics, Computational Fluid Dynamics (CFD), Partial Differential Equations (Pdes)
Abstract
Pumpkin is a multi-purpose seasonal vegetable packed with valuable source of nutrients. To get benefit from its nutrients throughout the year it can be dried and used in development of various products. Purposely, present study was designed to evaluate the effect of two different drying methods (hot air drying and micro wave drying) on the nutritional and functional properties of different fractions of pumpkin (pulp, seed and rind). Significant findings were observed by applying different drying techniques with oven dried pumpkin fractions (pulp, seed and rind) showing better nutritional and physiochemical properties. Proximate analysis showed high nutrient content in oven dried fractions (pulp, seed and rind) as moisture (4.10-8%), protein (6.6-30.8%), crude fiber (11.04-16%), fat (4.24-33.85%), ash(0.81-6.27%) and NFE (12.88-69.72%). Seed powder was low in moisture as compared to pulp and rind while high fat and protein content was found in seeds and rind fraction revealed high fiber and ash content. Micronutrient analysis depicted high minerals content in microwave dried fractions (pulp, seed and rind) with sodium 385-595mg/L, potassium 660-940mg/L, calcium650-840mg/L and phosphorous 410-830mg/L. Oven dried fractions powder illustrated better physiochemical properties. Bulk density ranged from 0.44-0.72 g/cm³, water solubility index was 0.08-3.24% and water absorption index was found as 2.5-4.92% in all pumpkin fractions. Sensory evaluation outcomes for color analysis revealed that panelists like oven dried fraction powders. The means score for color analysis of oven dried pulp was 3.60±0.96, seed 3.30±0.91 and rind 3.50±0.97, respectively and it was higher as compared to microwave dried powder.

Keywords
Pumpkin Fraction, Oven Drying, Micro Wave Drying, Functional Properties
DEVELOPMENT OF A GUIDEBOOK FOR AWARENESS ON CELIAC DISEASE
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Abstract
Food and nutrition plays an important part in guiding individuals to make better food choices and adapt a healthy lifestyle as these may vary due to the cultural and religious norms, geographical region, food availability and diseased conditions. Diet is specific for any diseased state and in some cases, such as celiac the only available treatment is through dietary modulation. It is important to guide and help them understand about disease management through proper food choices. The health experts all over the world are developing food guides for celiac patients, in order to help them make better food choices. Purposely, a baseline study was conducted to provide a framework for the development of a guidebook for celiac patients in Pakistan. The study was conducted in three phases: Initially, development of the guidebook for celiac patients. Secondly, validation of the guidebook from Expert panel followed by its acceptability and understanding amongst the general population. The results of the expert panel revealed that 70% of the participants responded that its appearance developed their interest, 70% agreed that the font was clear and readable. 90% of the respondents could identify food items that contain gluten and 93% of the participants understood the concept of a gluten free diet that the guidebook tried to deliver. 93% of the respondents could identify symptoms of the disease, 86.7% could identify foods celiac patients should avoid. When the general population was assessed it was found that 85% of the general population found the guidebook appealing, maximum participant i.e., 97.6% found it easy to read, 87.5% understood the message delivered. The developed guidebook will help clinicians, patients, their caretakers and family members to understand the disease and manage it through a gluten free diet.

Keywords
Celiac Disease, Gluten Intolerance, Guidebook
ASSOCIATION BETWEEN BODY IMAGE PERCEPTIONS & EATING BEHAVIOUR PATTERNS IN YOUNG FEMALE STUDENTS

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Abstract
The study focused on the association between eating behaviour patterns and body image perceptions amongst young female college students between the age of 18 to 26 years. The research was survey based with a sample size (N=340) female students. The tools for the study included a questionnaire consisting of Figure Rating Scale, Eating Behaviour Patterns Questionnaire (EBPQ) and Body Shape Questionnaire (BSQ). The results showed a statistically significant association (p-value= 0.00) between eating behaviour patterns and body image perception. The results also showed an association between body image perception and BMI (p-value= 0.00) but no association was found between eating behaviour patterns and BMI (p-value= 0.597). It was concluded that body image perception effects eating behaviour patterns and BMI status as well as the body image perception, significantly in females.

Keywords
Eating Behaviour Patterns, Body Image Perceptions.
ASSOCIATION OF ENDOThelial NITRIC OXIDE SYNThASE Gene POLYMORPHISM (INTRON 4) WITH PREECLAMPSIA AMong PAKISTANI FEMALES

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Abstract
Endothelial Nitric Oxide Synthase (eNOS), is an enzyme that synthesizes nitric oxide in the vascular endothelium. There are inconsistent reports related to the role of eNOS polymorphisms on the risk of preeclampsia development. Preeclampsia is a pregnancy-specific vascular disorder, characterized by hypertension and proteinuria that carries a severe morbidity and mortality risk for both mother and fetus. eNOS gene is extremely polymorphic including a single nucleotide polymorphism in variable number tandem repeat (VNTR) in intron 4, exon 7 named as G894T and in promoter region known as T786C. The aim of the present study was to investigate the possible influence of Intron 4 a/b polymorphism on the risk of preeclampsia. The relationship between endothelial nitric oxide synthase 4a/b polymorphism with preeclampsia was examined in 95 preeclamptic and 25 healthy pregnant women. All were genotyped for the number of 27 base pair repeats in intron 4 of the eNOS gene, using polymerase chain reaction (PCR). These PCR products were then characterized on polyacrylamide gel electrophoresis (PAGE) to find the association. Frequencies and percentages of genotypes of intron 4 a/b polymorphism of patients and controls showed no significant difference. The presence of eNOS b allele was higher in patients and both alleles were equally distributed in controls. So, the presence of allele a in intron 4 is not associated with the risk of preeclampsia. Thus, concluded that presence of 4a/b polymorphism in eNOS is not a risk factor for preeclampsia.

Keywords
Enos 4a/B, Preeclampsia, VNTR, PCR, PAGE
SINGLE SHORTEST PATH MIGRATING BIRDS OPTIMIZATION (SSPMBO) USING DYNAMIC PROGRAMMING FOR DYNAMIC ROUTING ON PACKET SWITCHED NETWORKS
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Abstract
Nature is absolutely a considerable, huge and vast origin in finding the creative solutions to the technical problems. With the rapid advancements in technology, now internet is becoming a key component for worldwide communication. It handles billions of autonomous framework and systems, each of the small portions are managed and controlled by the sole administration, for example ISP, OSP, WSP, agencies, corporations and universities. Information transmitted by the sender is routed towards receiver by navigating through numerous autonomous systems. This research is aimed at exploring the Natural computing based optimized network routing, by highlighting the optimal path (i.e. shortest path) with congestion detection, buffer overflow detection, link stability among numerous hops and based upon these conditions dynamic path selection.

Keywords
Migrating Bird Optimization, shortest path, link stability, dynamic path selection, Natural computing
ENERGY EFFICIENT V-FORMATION CLUMPING IN WIRELESS SENSOR NETWORK
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Abstract
Nature is the favorable mean to accelerate the pace of innovation in science and technological engineering domain. As wireless Sensor Networks (WSNs) are application specific systems made out of bulk of sensor nodes. One of the most basic issue and concern in Wireless Sensor Networks (WSNs) is to lessen energy utilization to drag out the lifetime of WSNs. Clustering scheme is one of the procedures, which have been utilized to acquire energy efficiency. The Wireless sensor network steering conventions can be classified as hierarchical, flat or clustered routing relying on their underlying architecture of the network. This paper is intended to provide v-formation based energy efficient clustering that will actually comprise intra-domain energy efficient clustering as well as inter-domain energy efficient clustering with uniform burden sharing of homogeneous sensors, inspired by the natural phenomenon of Migrating birds Optimization (MBO).

Keywords
Migrating Bird Optimization, v-formation, clustering, energy efficiency, Natural computing.
DEVELOPMENT OF NUTRITION EDUCATION BOOKLET ON MANAGEMENT OF DIABETES
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Abstract
This study was conducted for the development of nutrition education booklet for the management of diabetes. For the development of the booklet, baseline data was collected. A questionnaire was devised to assess the education needs, dietary habits and behavior patterns of the diabetic population. On the basis of the needs assessment content of the education booklet were finalized. The main educational contents were focused to make people learn about carbohydrate counting and concept and use of glycemic index for the management of diabetes. Both of these topics are of utmost importance to the diabetics. The outcomes of the study revealed that people have poor dietary habits and physical activity. It is shown in the study that 29.3% and 26.7% of people disagree and strongly disagree respectively that they follow the prescribed exercise recommendation. 29.3% and 20% of people disagree and strongly disagree respectively that they think that diabetes is not even a concern. The booklet developed will improve the dietary intake of diabetic patients and thus help them cope with their disease.

Keywords
Type 2 diabetes, nutrition education booklet.
SYNTHESIS AND CHARACTERIZATION OF COPPER OXIDE NANOPARTICLES FROM PLANTS EXTRACT
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Abstract
A green method using biological reliable processes has been developed for the synthesis of CuO nanoparticles. Synthesis of CuO nanoparticles were done using an environmental friendly method. Our main objective was to synthesize and characterize two different copper oxide nanoparticles by taking two different plant leaves extracts and then comparing their sizes and shape by characterization results.
An aqueous solution of copper acetate monohydrate and leaf extracts of capsicum annum and mentha spicata were mixed separately and then centrifuged. The supernatent was discarded and the left pallet was found to be CONPs which was then incubated and dried to powder form. A visible change was observed in the solution prepared as it changed from light blue to light brown to dark brown once the extract was added to the copper acetate solution. Characterization of the synthesized CuO nanoparticles was done using instruments such as UV-visible spectrophotometer, scanning electron microscopy and X-ray diffractometer. The size and shape of both the synthesized nanoparticles were compared from characterization results. The existence of peaks obtained in XRD confirmed CuO nanoparticles. Uv-visible analysis showed absorbance at 346 nm approximately. An average size of both the synthesized nanoparticles was 300 nm obtained during SEM analysis due to the formation of nanoparticle clusters. It was found that both the plant leaves are a suitable alternative for the easy and green synthesis of CuO nanoparticles.
EVALUATION OF BREASTFEEDING EXPOSURE ON DIARRHEA INCIDENCE AMONG INFANTS

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Abstract

World Health Organization has suggested that breastfeeding significantly protects against morbidity and mortality from diarrhea. Considering diarrhea as the principal cause of infant mortality in Pakistan and breastfeeding the most cost-effective intervention for shielding children against diarrhea the current study was designed to explore this relationship by selecting 96 feeding mothers of infants from pediatric Out Patient Department of Fatima Memorial Hospital, Lahore. A self assessment questionnaire consisted of demographic information, feeding practice, relation of breastfeeding with diarrhea and mother’s knowledge, preference and attitude towards breastfeeding practice was used to record the data. Results indicated high literacy rate 92.7% of mothers reporting that mothers were knowledgeable about breastfeeding benefits and their attitude towards breastfeeding was positive. The improper timings and excess formula feed intake were the most significant (18.8%) factors contributing to diarrhea. Most of the mothers interviewed were from age group 26-35 years (62.5%) with a mean age of 27±3.6 and were practicing non-exclusive breastfeeding (47.9%) and the practicing rate of exclusive breastfeeding was low (37.5%). Based on the conclusions it was determined that exclusive breastfeeding in first 6 months of infants improves their nutritional status and influences a positive effect on diarrheal incidences.

Keywords

Exclusive Breastfeeding, Non-Exclusive Breastfeeding, Diarrhea.
ESTIMATION OF BIODIESEL PRODUCTION BY MONOCULTURE CHLORELLA spp. FED WITH CARBON DIOXIDE FRACTION OF BIOGAS PRODUCED FROM FEEDSTOCKS
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Abstract
Developing country with energy crisis usually depends on depleting fossil fuels for energy production with an immense carbon dioxide liberation, so there is a dire need of developing Green Economy and Clean Energy by generating biofuel using waste and turning algae into biodiesel in an environmental friendly way that will lessen the effect of harmful greenhouse gas emission by diminishing the carbon dioxide foot print and hence entreating catastrophe of global warming and climate modification. In the current study a comparison of biogas production between two feed stocks was carried out in 0.2m³ capacities of bio-digesters and the carbon dioxide produced as a faction of biogas was utilized to feed monoculture chlorella spp. grown in two separate continuously stirred one liter flask photo bioreactors A and B for a period of three weeks. Results revealed that the production of biogas was more in the digester B fed with cow dung than digester A operated on kitchen waste, but more carbon dioxide yield was observed in digester A as compared to digester B. Consequently algae grown in photo-bioreactor A fed with more carbon dioxide (40% v/v) and showed more biomass than algae of photo bioreactor B which fed with lesser carbon dioxide (30% v/v) and biomass. The oils extracted from three sources of algae were subjected to physicochemical analysis and chemical properties of produced biodiesel from these oils were similar to standard ASTM values and were confirmed by HPLC analysis. It is concluded that produced biodiesel if upgraded further, can prove to be a useful vehicular fuel.

Keywords
Feed-Stocks, Photo-Bioreactor, Carbon Dioxide, Algal Biomass, Biodiesel
DEVELOPMENT AND QUALITY EVALUATION OF SNACK FOODS ENRICHED WITH DATE SEED POWDER
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Abstract
Date (Phoenix dactylifera) is one of the nutritious fruit with varying varieties but Ajwa Date is the one with exceptional health benefits among all the varieties. Ajwa Date is distinguished from other date varieties because of its supreme nutritional properties. Date seed pit is rich in antioxidants and dietary fiber and is discarded as waste. This study focuses on developing different types of food products by incorporating Ajwa Date seed powder as a functional ingredient. Purposely, products including coffee, white sauce pasta, cupcake and pancake were developed by incorporating Ajwa Date seed powder in it. Furthermore, all the products were then modified and standardized under the guidance of the expert panel of Food Science and Human Nutrition Department, Kinnaird College for Women Lahore. Products made with Ajwa Date seed powder were more acceptable by consumers and expert panelists as there mean score of overall acceptability for coffee made with ajwa date seed powder was 9.0 whereas mean score of 7.33 was given to the coffee made without ajwa date seed powder. Similarly, mean score for overall acceptability of white sauce pasta made with ajwa date seed powder was 9.0 whereas mean score of 7.5 was found for the white sauce pasta made without ajwa date seed powder. The pancake made without ajwa date seed powder had mean score of 7.83 while the mean score for overall acceptability of pancake made with ajwa date seed powder was 8.67. The sensory outcomes for all the products prepared by incorporating date seed powder indicates that the products made with Ajwa date seed powder was more acceptable by the sensory panelists thus these innovative products can be successfully used by consumers.

Keywords
Ajwa Date Seed powder, Antioxidant, Functional foods
QUALITY OF LIFE OF HOME-BASED WORKERS IN THE PUNJAB: URBAN/RURAL COMPARISON

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Abstract
Home-based work is an important part of the economy in many countries of the world including Pakistan. As home-based workers (HBWs) are usually low-paid, it is essential for the government to devise policies for an improvement in the quality of life of the people involved in this activity for purposes of income-generation. In this paper, we present the results of a statistical study based on the Punjab Home-Based Workers Survey 2017 that provides information regarding various aspects of the lives of 13,682 home-based workers contained in the 2017 sample. Our focus is on comparing the situation of the rural HBWs with that of their urban counterparts, and we have employed techniques of statistical inference in order to be able to comment on the situation of approximately thirteen million HBWs living in the Punjab. Results indicate that the situation of rural home-based workers is (i) better than that of the urban HBWs with reference to some of the 2017 Survey variables, (ii) more or less the same as that of the urban HBWs with reference to some other variables and (iii) worse than that of the urban HBWs with reference to yet another set of variables. Obviously, it is this last set of variables that requires governmental attention so that more favorable conditions may be created for the rural home-based workers in these areas. Significant interventions by the government for an improvement in the quality of life of home-based workers will take the province one step forward in the direction of Sustainable Development Goal No. 8 that calls for inclusive and sustainable economic growth, full and productive employment and decent work for all.

Keywords
Home-Based Workers, Urban/Rural Comparison
ON THE CLOSURE PROPERTY OF SIA LOG-SYMMETRIC RANDOM VARIABLES UNDER THE RECIPROCAL TRANSFORMATION
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Abstract
A little more than half a century ago, it was pointed out that one particular class of transformations of a Self-Inverse at Unity (SIU) random variable \( X \) yields further SIU random variables. In this paper, we consider \( Y = \frac{b}{X} \) which can be regarded as a ‘generalized’ version of the well-known reciprocal transformation and show that, through this transformation, the property of self-inversion is preserved in the case of SIA log-symmetric distributions as well. As a pertinent example, we apply this transformation to the widely applicable Lognormal distribution and derive the fundamental properties of the newly obtained density function.

Keywords
Self-Inverse, Log-Symmetric, ‘Generalized Reciprocal Transformation’
Abstract
Lactose intolerance is a metabolic condition in which gut is unable to produce lactase enzyme for the digestion of lactose. Approximately 60% of people in Pakistan suffer from this abnormality. Milk being the pivotal source of lactose as well as a rich reservoir of calcium simultaneously causes calcium deficiency in lactose intolerant patients. Purposely, the current study focused on developing a calcium rich menu to meet the RDA of lactose intolerant teenagers. Development was done by modifying the base recipes by using a combination of selected ingredients in a way to provide approximately 1000 to 1300mg RDA. The developed recipes were evaluated by the trained faculty members of Food Science and Human Nutrition Department, Kinnaird College for Women, Lahore, using a 9-point hedonic scale. The recipes developed included Banana oat pancakes (79.35mg Calcium), Calciblast (236.57mg Calcium), Carrot cake bites (44.30mg Calcium), Spinach kebabs (38.10mg Calcium), Red lent curry (37.20 mg Calcium), Garlic paratha with egg shell powder (123.50mg Calcium), Soy milk custard (206.00 mg Calcium), Semolina cookies (78.81mg Calcium), Pink tea with nuts (233.70mg Calcium), Nut bean salad (84.55mg calcium), Sweet potato curry with brown rice (96.40 mg calcium), Caramel topped banana tarts (52.50mg Calcium). Non-dairy calcium sources used included chia seeds, flax seeds, egg shell powder, soy milk, almond milk, semolina, moringa leaves, nuts, sweet potatoes, carrots. The calcium content of each recipe was calculated by using the Food Composition Table Pakistan. Thus, the inability to consume dairy products does not decipher for low calcium if an appropriate amount of plant based calcium rich foods are incorporated in the diet, one can attain the required calcium RDA.

Keywords
Recommended Daily/Dietary Allowance, Lactose Intolerance, Sensory Evaluation, Consumer Acceptability
DEVELOPMENT OF FUNCTIONAL FOODS FOR CARDIOVASCULAR PATIENTS

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Abstract
Cardiovascular disorder is one of leading cause of mortality with high expansion rate across the globe. Dietary management and nutritional interventions has been recognized as an effective way out for this ailment. In this regard, current study was focused on the development of functional foods for cardiovascular patients. Purposely, five functional food products were developed using healthy ingredients packed with valuable functional components such as flaxseeds, gogi berries, pumpkin seeds and co-enzyme Q10 and analysed for their sensory properties by the Sensory Panelist at Food Science and Human Nutrition Department, Kinnaird College for Women, Lahore. The base recipes were analyzed and then modified according to panel suggestions. The second trial of development revealed improved sensory scores for all the parameters of products like cup cakes, quiche etc. The products were then evaluated by general consumers to check their acceptability. The study concluded that the functional products were acceptable by the public and the products formed were all good in taste and are easily acceptable for cardiovascular patients and general public.

Keywords
Functional foods, Cardiovascular disease
EFFECTS OF FOOD ADDITIVES ON HUMAN HEALTH AND GUT MICROBIOTA
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Abstract
Food additives are substances added to a food to preserve it, give it particular flavor, or improve its taste and/or appearance. Researchers use additives in foods to retain nutritional value, maintain freshness and safety, and increase affordability and convenience. These may be natural or synthetic. The change in human diets since the mild-twentieth century is the increasing consumption of food additives that are incorporated into almost all foods. There are a large variety of food minor components, additives and chemical contaminants that can dramatically affect human gut microbiota (GM) and dietary patterns greatly influence its composition. The primary basis for approving the use of these agents is the notion that they do not cause acute toxicity at concentrations reasonably greater than their approved concentrations. They directly impact the intestinal microbiota, increasing its ability to penetrate the normally sterile mucus layer and to express pro-inflammatory molecules, leading to intestinal inflammation and metabolic syndrome. Moreover, its consumption is associated with an increase in anxiety behavior and further experiments looking at the release of pro-inflammatory cytokines in the brain. These ingredients also help ensure the availability of flavorful, nutritious, safe, convenient, colorful and affordable foods that meet consumer expectations year-round. Recent studies have demonstrated that the consumption of additives in excess may be one of the factors for reduction of GM diversity, altered host microbiota interactions and, consequently, contribute towards the prevalence of metabolic syndrome and other inflammatory diseases in industrialized societies. Thus, there is a profound need for more in-depth investigations to study their effects on the human GM.

Keywords
Diet, Food additive, Gut microbiota, human health
ALOE VERA: AMAZING HEALTH BENEFITS
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Abstract
Aloe vera is a perennial, drought resisting succulent herb that belongs to the Asphodelaceae family. The name Aloe vera is derived from the Arabic word “Alloeh” meaning “shining bitter substance,” while “vera” in Latin means “true”. Aloe vera plant contains 99-99.5% water content. The remaining 0.5-1.0% solid material has 75 different potentially active compounds including water- and fat-soluble vitamins, minerals, enzymes, polysaccharides, phenolic compounds, and organic acids. In the pharmaceutical industry, it has been used for the manufacture of topical products such as ointments and gel products, as well as in the production of tablets and capsules. Aloe vera is well known for its considerable medicinal properties i.e. Aloe vera juice plays a very important role for the management of arthritis. It is a powerful anti-inflammatory agent, is able to speed up cell growth, thus it repairs arthritis damaged tissue. Isolated phytosterols, namely lophenol and cycloartanol, have the ability to induce the down-regulation of fatty acid synthesis and a tendency for up-regulation of fatty acid oxidation in the liver, which favours in the improvement of hyperlipidaemia. Some inorganic elements (vanadium, manganese, copper) and especially the polysaccharides present in Aloe vera may have a significant role for anti-diabetic activities. Aloe vera juice enables the body to heal from cancer and also from the damage caused by radiotherapy and chemotherapy that destroys healthy immune cells crucial for the recovery. So, Aloe vera can be utilized in functional foods especially for the preparation of health drinks. It can also be used in other food products including milk, ice cream and confectionery, may also be used as nutraceutical for the management of chronic diseases.

Keywords
Aloe Vera, nutraceutical, functional food, chronic diseases, medicinal properties
SYNTHESIS AND BIOLOGICAL INVESTIGATION OF NOVEL THIAZOLIDINONE SCAFFOLD AS AN ANTIOXIDANTS
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Abstract
A newly synthesized compounds, $N_3,N_3'$-Bis(substituted-5-mercaptophenyl) isophthalyl-bis(thioureas), were prepared in the presence of dry acetone by the treatment of isophthalyl dicarboxyl chloride along with KSCN to give isothiocyanates intermediates. These isothiocyanates were treated directly with variously substituted aromatic amines under inert conditions gives respective bis-thiourea derivatives in tremendous yields. Bis Methyl 2-[3-(benzo[d]thiazol-2-yl)-2-isophthalyl-bis-4-oxo-thiazolidin-5-ylidene] acetates were prepared from bisthioureas by using of DMAD, in the presence of dry methanol. All the compounds were characterized by physical data, IR and NMR spectroscopy. Synthesized compounds were evaluated for their antioxidant activities.

Keywords
Benzothiazolamines, Bis-thioureas, Thiazolidinone heterocycles, Antioxidants.
Abstract
This descriptive research study was designed to explore the perception of secondary students regarding computer education. The main objective of this study was to explore the students’ perception regarding computer education at secondary level including problems, hurdles, limitations faced in regard to computer education. The Study was conducted on the students of Government as well as private sector institutions dealing with secondary education. SPSS (Statistical package for Social Science) 22 software was used to find out the analytical values in the form of frequencies and percentage while Mean and standard deviation were also calculated. It was concluded that computer education has a professional scope for future, as this has the capability of enabling students also enhances the skills and knowledge for living in this modern world. It is very critical that mostly institutions are facing problems in delivering proper education of computer science due to limited resources. But it could be said that with proper supervision and collaboration of institutions and government departments, we can overcome these critical issues.

Keywords
Computer, Education, perceptions, Secondary
A NEW APPROACH: COGNITIVE MULTI-LEVEL AUTHENTICATION (CMLA) IN NUCLEAR COMMAND AND CONTROL
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Abstract
The disastrous damage that could be the consequence of unauthorized, unapproved utilization of an atomic weapon and from the expansion of nuclear atomic technologies to unacceptable states, has driven the atomic forces to spend epic measures of securing atomic warheads as well as the supporting materials, infrastructure, and industries. The procedure of ratifying user’s credentials is known as authentication. “Information Security” and “Cyber security” are seem to be interchangeably used terms. “Information Security” and “Cyber security” are not identical, but the terms considerably interact with each other. Cognitive based authentication is a type of authentication that is actually the amalgamation of neurobiological and psychological techniques. This research is intended to provide human inspired Cognitive Multi-level Authentication (CMLA) utilizing the extensive quantum processing as well as secure enciphering capabilities for nuclear command and control.

Keywords
Cognitive Computing, Nuclear command and control, Quantum computing, multi-level authentication, encipher.
A COMPARATIVE STUDY TO ASSESS THE INTAKE AND KNOWLEDGE OF ENERGY DRINK CONSUMPTION VERSUS OTHER DRINKS
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Abstract
The study focused on assessing the consumption, knowledge and perceived effects of energy drinks reported by the respondents. A cross-sectional descriptive study was carried out among 500 students of four different institutes namely; Beaconhouse School System, Kinnaird College for Women, Lahore School of Economics and Lahore University of Management Sciences where majority were between the age of 20 to 21 years. A structured questionnaire was used for data collection. Data analysis was done using SPSS software version 18. Knowledge regarding energy drinks and other drinks consumption was assessed using Chi-square significant (P<0.05) for all 6 questions of energy drinks followed by soft drinks (p=0.00), milk based drinks (p=0.00) shows whereas insignificant (P˃0.05) for tea (p=0.191) and fruit juices (p=0.94). Majority of the respondents consume 6-7 glasses of water per day. It was found that 61.4% of the students consumed energy drinks while majority preferred sweetened tea/ coffee. After tea, the second most drinking beverage was soft drink with a percentage of 78% that also creates an alarming situation for the young generation. Fruit juice consumption was lesser with a percentage of 49% as compared to sweetened juice (67%). The milkshakes (56%) consumption was higher than whole milk (46%), low fat (44%) and smoothies (48%). It was also observed that most of the students feel energetic (82.6%) and alert (72.2%)but experiencing adverse effect(62.2%) too that was a threat to public health. The common reason for energy drinks consumption was Fun (27.8%) Peer pressure (22.8%) and Advertisement on TV (22.4%). After drinking majority of respondents complaints of headache, insomnia (30%) and tachycardia (27%). Therefore proper system is required for educating the youth about the hazards of consuming energy, soft and diet drinks.

Keywords
Tea, energy drink, soft drink, sweetend juice, milkshakes.
HEALTH BENEFITS OF BEETROOT: A SUPER FOOD
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Abstract
Beetroot is a naturally occurring root vegetable that is commonly found in temperate and tropical regions. It is grown in many countries worldwide, where it is consumed as part of the normal diet. The beetroot species Beta vulgaris L. is considered a good source of dietary fibre, minerals (potassium, sodium, iron, copper, magnesium, calcium, phosphorus and zinc), vitamins (retinol, ascorbic acid and B-complex), phenolic compounds and highly bioactive pigments known as betalains. Betalains in beets aid in the body’s detoxification, reducing oxidative stress and inflammation. Beets have long been known for its amazing health benefits for almost every part of the body. The high content of iron in beets regenerates and reactivates the red blood cells and supplies fresh oxygen to the body. The copper content in beets helps to make iron more available to the body. Beetroot help in the formation of red blood cells and strengthens the body’s power resistance and has proved to be an excellent remedy for anaemia. Beetroot helps to control hypertension, acts as a blood purifier and natural detoxifier. Betaine present in beetroot prevents the build-up of an amino acid called homocysteine in plasma. This amino acid can harm blood vessels and contribute to heart disease, stroke, or circulation problems. Drinking beets juice regularly helps to relieve chronic constipation. So, beetroot can be used in different food products or as nutraceutical for the management of chronic diseases.

Keywords
Beetroot, nutritional potential
INTELLIGENT STORAGE RELIABILITY MANAGEMENT IN CLOUD BASED DATA CENTER

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Abstract
As the world moves towards the idea of digitization the physical servers has been replaced by clouds and data centers. Data center is basically a collection of hardware, software, peripherals, backup and security systems that facilitates the user to access and store data. The data centers should be reliable in order to give its user continuous services. Reliability can be defined as the ability of the components to perform their tasks without any fault. Data center comprises of different tiers that measures their ability to operate in case of any failure. The term reliability often refers to the availability of data centers or the total time when data centers are operational. The total time during which the data center is operational is divided by the total measured time to check the reliability of the data centers. Data center will be considered reliable if and only if it provides the facilities as long as it remains operational. The process that keeps the data center running should give the accurate desired results and in desired time. The physical infrastructure and the operating staff are the key factors that measure the reliability of data centers. In this paper, efficiency of data center in term of computational, networking and storage spaces are considered for improving the data centers reliable.

Keywords
Cloud Computing, reliability, Data center
ASSESSMENT OF FOOD CHOICES OF HOSTELITES OF KINNAIRD COLLEGE

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Abstract
Current study focused on assessing the food choices of the hostelites of Kinnaird College. Questionnaires were distributed amongst the hostelites which contained in-depth questions about various aspects of selecting foods (social, psychological, environmental), as well as their dietary intake of all food groups. The data obtained was quantified and analyzed using Statistical Package for Social Sciences version 21. The dietary intakes were compared to the standard Food Guide Pyramid (FGP) servings for the age group of 16-24 years. The recommended daily servings of grains are 6-11, vegetables are 3-5, fruits are 2-4, and dairy and meat are 2-3 each. The results concluded that there was a moderate impact on the students’ diets from their family members who they often shared meals with family when at home. Moreover, the hectic study schedules caused them to skip breakfast in the morning. Peer pressure, sufficient pocket money and dissatisfaction with the hostel meals were all important aspects that may have led to consumption of non-hostel meals. Results also indicated that students were not consuming sufficient amounts of dairy, fruits, vegetables or high-fat meats. However, their intake of cereals, egg and chicken were more satisfactory. Overall, their diets were found to be imbalanced according to the FGP servings. Therefore, social, psychological and environmental aspects of food choices may play an important role in shaping the food choices of hostelites away from home. This may cause a negative impact on their intake of healthy foods, leading to higher intake of fast and canteen foods.

Keywords
Food Choices, Dietary Intake, Hostelites
HOSTLE RESIDENCE EFFECT ON THE DIETARY PRACTICES OF FEMALE HOSTLE RESIDENTS
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Abstract
Hostel life brings about many changes in an individual’s life such as behaviors change, perspective changes and most of all, changes in dietary habits. Purposely, this study was conducted to assess the dietary practices of women hostel students residing in Punjab University and Lahore College for Women University, Lahore. A sample of 200 students between the age of 19 and 22 were selected for this study. An interview schedule was used to collect the required information from the sample. The results showed that majority (67.5%) of the sample had a normal Body Mass Index (BMI) and they showed signs and symptoms of good physical health. Mean intake of carbohydrate was 139.56 grams per day (greater than the recommended amount by around 9 grams) and fat intake was 76.78 grams per day which is according to the RDA whereas, protein consumption (36.86 grams/day) and total calories consumed (1396.68/day) were below the RDA. Iron, calcium and vitamin C were found to be deficient in diets of the sample population. Through Pearson coefficient of correlation, it was found that there was a significant relationship between BMI, total calories, calories from carbohydrate, calories from protein and calories from fat (p=0.526), while non significant results were seen between total calories, calories from carbohydrate, calories from protein and calories from fat (p=0.000). Change in food habits due to limited availability of food choices were also experienced by the students. Skipping meals, especially breakfast was done by 47.5% of the sample. Consumption of snacks and fast food was high among the sample along with low physical activity. Chapatti, bread, milk, eggs and daal were consumed daily by majority of the sample. There was a fair amount of tea, coffee, juice and soft drink intake as well. Frequency of sugar intake was also quite high in the sample. Therefore, students should be advised on healthful eating habits, especially concerning snacks. Balanced meals containing adequate amounts of energy, macronutrients, vitamins and minerals should be consumed.

Keywords
Dietary habits, hostel students, macronutrients, micronutrients, energy intake.
Abstract

Historical tourism is the fastest growing sector in tourism industry. Lahore is an important historical heritage destination which is capable of attracting tourists from all over the world. The aim of this research is to examine the issues and strengths in historical tourism industry of Lahore through the application of SWOT analysis and by survey method. One of the greatest strengths of historical tourism of Lahore is iconic Mughal structures, economical rates and enriched culture. However, the weakness is said to be poor restoration practices, lack of promotion, lack of management and lack of development in tourism sector by government. The most serious threat to historical tourism industry in Lahore is law and order situation, political instability, security issues, negative media reporting about Pakistan and ineffective promotional policies by government departments. There are tremendous opportunities in historical tourism industry in Lahore which can be capitalized if government prioritize historical tourism industry as other industries in Pakistan by making strategies for promoting historical tourism in Lahore all over the world.
PERSON RE-IDENTIFICATION USING DEEP CONVOLUTIONAL NEURAL NETS
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Abstract
Person re-identification is a very challenging problem of the current era which aims to identify the person across different cameras at different locations and time. It is a hard problem as the same person is viewed differently in multiple cross-view cameras. There are lot of factors like light, viewpoint, background, occlusions, image resolution and the different placement of the cameras, which can bring variation in images and thus making it difficult for the system to re-identify the same person. But this area has gained attention of lot of researchers in recent decade due to its application in surveillance and forensic systems. Due to deep learning and Convolutional Neural Networks we have gained power to achieve some invariance to translations and distortions of input. In the recent years, this problem has been addressed by researchers using different techniques of machine learning like Convolutional Neural Networks, Support vector machines and Fisher discriminant function etc. In this paper I have tried to solve this problem by using the deep Convolutional Neural Networks. I have used Cuhk03 dataset for training purpose. The presented model learns the features and computes the similarity value indicating whether two images are of same person or not. The architecture includes a layer that computes cross-input neighborhood differences. The proposed approach simply outperforms when trained on large dataset like CUHK03.

Keywords
Cardiovascular Diseases; Statistical Tools
Abstract
Current study focuses on the need of edible sources of vitamin D thus an attempt was made to increase these sources by fortifying common recipes with adequate addition of vitamin D in different recipes namely; rusks, granola bars, vegetable nuggets, hummus, banana bread, chocolate chip cookies, chocolate bites and chocolate spread. The sensory characteristics of the recipes were tested by a trained panel using a 5 point Hedonic scale. The sample with highest scores for each recipe was selected and standardized. The samples during sensory evaluation showed significant differences while minimal differences were shown in samples prepared for standardization. The recipes were then tested by volunteering consumers to check consumer acceptability. Rusks was accepted at mean score of 4.88, Granola Bars at 4.42, Vegetable Nuggets at 4.40, Hummus at 4.46, Banana Bread at 4.47, Chocolate Chip Cookies at 4.38, Choco Bites at 4.86, and Choco Spread at 4.46. All of the fortified products provide 55% of RDA value of vitamin D.

Keywords
Micronutrients, Vitamin D and Standardized Recipe
ASSESSMENT OF DIETARY AND LIFESTYLE FACTORS THAT MAY TRIGGER MIGRAINE
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Abstract
Migraine is a neurological disorder and is one of the most prevalent diseases worldwide. It is a disabling disease which affects the life of people. The aim of the study was to assess the leading dietary and lifestyle factors that may trigger migraine; moreover the most common type of migraine was also assessed. A self-assessment questionnaire was used in which demographic profile, questions about migraine duration, frequency, symptoms, and diagnostic criteria for migraine, trigger and relieving factors were asked. A total of 50 migraineurs were assessed out of which 80% were females and 20% were males and the onset age of migraine was 19.74±5.38. Migraine with aura 44% was more prevalent among the people. Symptoms that were found in migraine patients commonly were nausea (74%), vomiting (42%), photophobia/phonophobia (92%), and concentration difficulty (68%) and blur vision (46%). The most common lifestyle and environmental trigger factors were stress (88%), noise (70%), sleep disturbance (64%) and sunlight (58%) and the common dietary factors were chocolate (18%), cocoa and caffeine (16%), dairy products (14%) and miscellaneous food items (12%). Most of the people suffered from lifestyle and environmental factors and less people were affected by both dietary and lifestyle factors with some females affected by hormonal changes. Positive family history was also found to increase the prevalence and risk of migraine.

Keywords
Migraine, Migraine with aura, Migraine without aura.
PERFORMANCE ANALYSIS OF LEACH, SEP AND MGEAR IN HWSN
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Abstract
A SEP (Stable Election Protocol) for clustered heterogeneous wireless sensor systems. Presently now a days, another convention named GEAR is utilized for organizing in WSN (remote sensor network). MGEAR is also in manner of energy efficient convention which is utilized for the controlling reason in WSN. Low-energy adaptive clustering hierarchy of importance ("LEACH") is in addition a TDMA-based MAC protocol which is facilitated with clustering and a clear routing protocol in remote sensor frameworks (WSNs). Clustering is an approach to minimize energy consumption of such network Remote sensor frameworks are restricted by storage capacity, energy and computing power. Different type of routing protocols used also the routing protocols problems vs. proposed solutions. In this paper, a study on routing protocol in WSNs classified as data-centric, hierarchical and location based depending on the network structure. By then a part of the multipath routing protocol which are extensively used in WSNs to improve network performance discussed. So in this paper an Energy Aware Sleep Scheduling Clustering based Routing scheme (EASSCR) for Wireless Sensor Network is proposed anyway the system ought to be adequately versatile to avoid battery drain of clusters heads particularly those near the BS and to address topology changes as center points stop to exist. The objectives of this arrangement are, increased stability period of network, and minimize loss of sensed data. Performance analysis show that the significant improvement over existing protocols LEACH and SEP in terms of lifetime of network and data units gathered at base stations. Pros and cons of each coordinating routing algorithm are discussed here. Furthermore, this paper examines and compares the performances of all routing protocols. The study comparison shows that the essentialness of all framework protocols depends upon the used application with special aspect in WSN.

Keywords
Wireless Sensors; Protocols; Routing; Energy Efficiency; Clustering.
NUTRITION SCREENING OF ELDERLY RURAL WOMEN
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Abstract
Present study was intended to characterize a rural population of elderly women (above 50) residing in rural areas of Warburton, Renala Khurd, Jallo Pind and Ghazi Minara through nutrition screening. Malnutrition Universal Screening Tool was used for the assessment of elderly women. The study population consisted sample size of (n=400). The excluding criteria was diseased women and those who were below 50 years of age and the inclusion criteria adopted were elderly female residents at homes who would accept and collaborate in the collection of data. The results revealed that NutritionScreening form showed high proportion of low nutrition risk in women above age of 50 years.

Keywords
Nutritional Status, Nutrition Screening, Malnutrition, Elderly
E-QARI: QURAN RECITATION GUIDE
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Abstract
In the Islamic religion, mistakes during the recitation of the Holy Quran are strictly forbidden. Mistakes can be missing the Arabic words, punctuation, accent and wrongly utterance of Harakats. Thus, a Hafiz or reciter who memorizes or reads the holy Quran needs another expert Hafiz or tutor who listens to the recitation and points out the mistakes. Due to this serious commitment, the availability and expertise of an expert hafiz are doubtful. An expert hafiz can also make mistakes while hearing imputable to environmental interruptions like noise, attention, other voices etc. In order to tackle this issue, we designed, developed, and tested the E-Qari system. E-qari is based on Mel-Frequency Cepstral Coefficient (MFCC) technique to extract voice features from Quranic verse recitation and maps them with the data collected during the training phase. Any mismatch mistake is pointed out. Testing results of short verses of the Quran using the E-qari system are very encouraging.

Keywords
A SIMPLE APPROACH TOWARDS SYNTHESIS OF COUMARINOLIGNOID

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Abstract
Coumarinolignoid is a natural product found to exhibit hepatoprotective activity. In this work, daphnetin is condensed with 2, 3-dibromocinnamic acid to give coumarinolignoid in four steps via convergent strategy. All the intermediates and products were characterized spectroscopically.
Abstract
Cyber technology is gaining prominence in our daily lives. With the growing use of cyber technology, cyber
security is an essential aspect that needs to be considered to keep it guarded and unthreatening to use.
Automated Teller machine (ATM) is an electronic telecommunication machine that is used for making financial
transactions anytime without interacting directly with the bank. Nowadays customer’s data e.g. PIN code used
in the ATM are said to be cloistered. But hacking of customer’s data and stealing of money due to lack of
proper security have resulted in loss of million amount of money in Pakistan. To overwhelm the major
drawbacks of Classical regime-based ATM e.g. skimming, Card and Cash trapping, Transaction reversal fraud
there is a need to shift to Quantum regime-based ATMs for better safety. Cyber security in ATMs through
classical computing techniques is unsatisfactory because of the security and safety issues. Quantum Key
Distribution (QKD) is a secure method of communication which uses cryptographic protocol to overcome the
issues faced in existing ATMs. This paper aims to provide a way to improve ATM security via QKD protocol
named HDQKD which involves quantum mechanics phenomenon.

Keywords
Cyber Technology, ATM, Quantum Computing, Quantum Key Distribution, Security Management.
Abstract
The process of value addition in the manufacturing cycle is seen to evolving at a remarkable pace globally. With newer equipment and technology, more and more batches are made with minimal time. However, Pakistan, despite enjoying adequate equipment facilities, is not completely enjoying the benefits of mass production because of its reliance on other countries for importing raw materials. Pakistan is subjected to many unfavorable business conditions which hinder in its effort for becoming self-sufficient in the field of pharmaceutical products. Despite being a home to many senior pharmaceutical companies, Pakistan imports its raw materials, with the help of structured interviews and literature review I would be able to conduct a depth analysis that why Pakistan cannot manufacture the raw materials on its own. Pakistan’s inability is triggered by numerous uncontrollable factors and certain factors that demand adequate time horizons for implementation. A few companies which had taken an initiative decade back were not a very good example for the other to follow due to the hefty regulations on them. Hefty regulations by the state pose disinterest to the remaining potential entrants. The government does not find the feasibility in encouraging domestic manufacturing and halting its imports. This acts as a demotivating factor for foreign investors who, although term Pakistan as a business-friendly nation, are reluctant to support the venture. Expert interviews and discussion had apprised us of the complexities involved in the raw material production process and the numerous dossiers present in each formulation. The presence of black market and fake products has also been a drawback to this new opportunity. The findings had shown that all the major value addition players such as GETZ and GSK require bulk quantities of raw materials for batch production. Currently Pakistan is not able to provide the requirements in huge quantity; thus, value adders save time by allocating all their demands to single sources only. Due to the delicacy of the nature of the product, manufacturing mills have to be associated with certain compliance agencies compatible with global standards. Pakistan is not housing any of the compliance agencies at the moment. Some of the companies which have been operating are not enjoying economies of scale which is not a very good predictor of success. The research would unfold the science of how and why Pakistan needs to explore this new scope and what the government, as a torchbearer, has to perform.

Keywords
Research and Development, Economies of Scale, Government Policies, Quality, Price
IMPLEMENTATION OF WIRE RESISTANCE COMPENSATION TECHNIQUE ON DIRECT SENSOR TO ATMEL 89C51 MICROCONTROLLER INTERFACE

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Abstract
A direct sensor to Atmel 89c51 micro controller interfacing with large wire resistance compensation method is implemented. A capacitor is allowed to discharge through four different paths, one at a time. The specific discharging time is then converted into digital number using coding and then the counts ratio for different discharging paths is used to compensate the effect of wire resistance. The experimental data is taken for Atmel 89c51 for two different cases. In the first case the sensor resistance is varied from 1kΩ to 1.1kΩ(1% tolerance) in the regular steps of 10Ω and then the counts ratio corresponding to the discharging time is calculated and plotted. The second case is to vary the wire resistance from 1Ω to 20Ω in the steps of 1Ω and the counts ratio corresponding to its discharging time is calculated and plotted. The results and analysis show that the counts increases as increase in the resistance whether it is sensor resistance or wire resistance i.e. number of counts is directly proportional to the increase in resistance. However, the increase is not linear and also there is relatively small difference between the counts ratio with NLRC and with LRC. Hence the implementation of a modified scheme of wire resistance compensation works well even if the sensor is placed at some distance and connected through long connecting wires. The results of wire resistance variation show that the counts oscillate about the value 1 i.e. ± 0.001 (up to 3 decimal places) with the wire resistance compensation method. The counts with no wire resistance compensation method increases from the value 1 and go on increasing with the increment in wire resistance. The noise factor produces a minimum limit on the accuracy achieved with this technique; hence it needs to be minimized.

Keywords
Wire resistance compensation, direct sensor, counts ratio, modified scheme
GREEN SYNTHESIS OF ANTI-INFLAMMATORY THIAZOLES IN DES
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Abstract
Deep Eutectic Solvent (DES) is becoming prevalent day by day due to increasing demand of benign solvents [1,2]. DES mediated reaction of N-substituted tetrahydrocarbazole with different ketones afforded a series of disubstituted thiazoles. DES proved as a best environmentally benign solvent and as well as catalyst for this hetero-annulation. All compounds have been assessed for in vitro anti-inflammatory activity and found comparable with standard drug. Structure confirmation was accomplished with the help of FTIR, MS, and 1H NMR spectroscopic methods.
MOLECULAR STUDIES OF E1 PROTEIN OF HCV-3a
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Abstract
Hepatitis C virus belongs to the Flaviviridae family of genus Hepacivirus, it is the most precarious virus as it escapes the body’s immune defense. About 80% of the liver diseases in the world is caused by HCV. It is 55 to 65nm in size with structural and non-structural proteins in its RNA genome. The E1 protein of the viral genome is associated with the entry of the virus in hepatocytes and its modification is involved in membrane fusion. Thus E1glycoprotein have an essential role in the virus life cycle. The current research focuses on the amplification, cloning and sequencing of E1 protein of HCV-3a strains isolated from blood of different patients. Phylogenetic relation of the native E1 protein was studied with respect to other countries as well as different regions of Pakistan. Furthermore the secondary and tertiary structure of the native protein was determined by using Insilco techniques.

Keywords
A PROPOSED CIRCUIT OF DARLINGTON PAIR BASED ON TRIPLE JFET
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Abstract
Advancements in technology and requirement of miniaturization of electronic equipment have led to the aspect of increasing the efficiency of devices decreasing their size at the same time. Increasing efficiency means getting as much output from mechanics of the equipment as the input provided although this is not possible. Despite this a maximum efficiency can be achieved. Amplification is done using transistors. Transistors perform the required function using semiconductor materials where the conducting properties of the material can be calibrated. Darlington pair transistor used for this purpose amplifies the output accordingly. That is, the output voltage gain from first transistor in the triple topology is amplified by that of the second and that of the second by the third. Thus maximum amplification can be attained. Implementation of Triple Topology of Darlington Pair transistor in this research gives the respective enhancement of voltage gain and current gain. An input of 10mV provides and voltage gain of 10 and a current gain of 3k. This range of output refers to this combination of components implemented as an application of small-signal and power amplifiers. Biasing resistance variation impacts the voltage gain received. Different readings as tabulated depict best output acquired through the very resistance values infested.

Keywords
Transistor, JFET (Junction Field Effect Transistor), Darlington Pair, Voltage Gain
EXCLUSION MAPPING OF THREE MICROCEPHALIC FAMILIES WITH THE ASPM GENE

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Abstract

Autosomal recessive primary microcephaly is a neurodevelopmental disorder caused by mutation in genes which are involved in the process of neurogenesis, embryogenesis, and cytogenesis. Primary microcephaly is highly prevalent in Pakistan attributed to the higher rate of consanguinity. The patients affected with microcephaly have head circumference below 2SD compared to normal population mean for the same age and sex. Twenty four loci have so far been identified to be responsible for the development of this disorder. However the gene for the fifth locus MCPH5 namely ASPM gene has been reported to be the major underlying genetic cause of primary microcephaly, accounting for as much as 50% of the microcephalic cases reported from Pakistan. Here we report three families affected with autosomal recessive primary microcephaly sampled from various regions of Punjab, Pakistan. After collection of all relevant clinical information and pedigree analysis, the venous blood of all the available family members was drawn for further molecular analysis. Owing to its highest prevalence rates, ASPM gene is the first gene of choice for exclusion mapping. The molecular screening for ASPM was done using five STR markers namely D1S1660, D1S2655, D1S306, D1S518 and D1S373. The PCR products were visualized using polyacrylamide gel electrophoresis. By careful haplotype analysis, no linkage with ASPM gene was found in any of the three recruited families. Further genetic investigations implying conventional linkage mapping, next generation sequencing, and genome wide association studies are needed to elucidate the exact genetic makeup responsible for the disorder under study.

Keywords

Primary Microcephaly (MCPH), ASPM, Exclusion mapping.
HPLC ANALYSIS OF POLYPHENOLIC COMPOUNDS EXTRACTED FROM DAUCUS CAROTA SUBSP. SATIVUS WITH ORGANIC SOLVENTS

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Abstract
Polyphenolic compounds are the secondary metabolites of plant and are abundantly present in vegetables, fruits, teas and nuts. Phenolic compounds contain benzene ring having more than one hydroxyl substituents and act as an antioxidant by inhibiting the reactive oxygen species and can also inhibit the oxidation processes in the cell. Flavonoids are the big class of polyphenolic compounds which has sub-classes; flavanols, flavanones, anthocyanin, flavonols, flavones and isoflavones. Flavonoids act as an antioxidant against the free radicals which cause oxidative stress. Oxygen is necessary for the living cells but it can also harmful for the cell. This oxidative stress causes many degenerative disorders like; cancer, cardiovascular diseases, diabetes and osteoarthritis. Disturbance in the balance of reactive oxygen species is due to the altered defense mechanism of antioxidants. Proteins can also be denatured by free radicals. Reactive oxygen species are not harmful, if they will be controlled, then it will act as an intracellular messenger. Flavonoids are the bioactive antioxidants which can suppress the enzymes associated with the production of free radicals. Many of the degenerative disorders can be cured or treated with the help of antioxidants. In the present study, flavonoids have been extracted from red carrot peel by Soxhlet extraction method using ethanol. Different classes of flavonoids, extracted from carrot peel, identified by HPLC and TLC and antioxidant potential of these flavonoids using in-vitro antioxidant assay would be presented. Expected outcomes from this study is to use the carrot peel as an antioxidant against cancerous and inflammatory effects.

Keywords
Polyphenolic Compounds; Flavonoids; Reactive Oxygen Species; Red Carrot Peel; Antioxidants
ROLES OF NEWLY IDENTIFIED SPASTIC PARAPLEGIA PROTEINS IN ORGANIZATION OF AXONAL ENDOPLASMIC RETICULUM
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Abstract
Axons possess a continuous network of smooth tubular endoplasmic reticulum (ER), extending from the nuclear envelope throughout the neuron to synapses. Mutations affecting proteins with intramembrane hairpin domains that model tubular ER membrane can lead to the axon degenerative disease, hereditary spastic paraplegia (HSP). However, the extent and mechanisms by which HSP proteins contribute to axonal ER organization and dynamics are unclear.

To understand these mechanisms, there is a need to visualize axonal ER in wild-type and mutant live axons. I have therefore aimed to develop these tools in Drosophila larvae and adults, and use them to visualize mutant phenotypes. Firstly, I developed a system to visualize fluorescently marked ER in individual axons in adult fly legs, and tested how this can be used to investigate the effects of loss of intramembrane hairpin HSP proteins on ER in adult legs. Secondly, known mutations affecting HSP hairpin proteins reduce the axonal ER network but not severely; I hypothesized that additional HSP ER membrane proteins might contribute to residual tubule formation; these include Arl6IP, also reported to promote ER tubule formation. I generated transgenic flies to overexpress a fluorescently tagged eGFP::Arl6IP1, and found that this fusion protein localizes within axonal ER. In conclusion, my work shows the utility of GFP markers of axonal ER, it can facilitate faster screening for other genes that potentially regulate ER structure and for ageing phenotypes that are not apparent in larval stages, and suggests Arl6IP1 as another HSP protein with a role in axonal ER organization.
DEVELOPMENT OF GLUTEN-FREE FLOUR COMPOSITE
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Abstract
The composite flour contains appreciable amounts of protein, lysine, dietary minerals and other nutrients to provide a healthy alternative to wheat products. The need of the research was conducted to develop and evaluate the composite of gluten free flour, a healthy substitute to wheat flour for the celiac patients. The composite was made by blending different gluten free flours containing rice flour as a baseline sample mixed with maize and chickpea flour in different ratios. Blending of different flours with rice flour has potential to give gluten-free flour that would be easily available and economical. After that flours were evaluated for the physiochemical and rheological properties of the developed blends. The treatments were made to compare the results T0 is a controlled sample which was wheat flour and T1 was a baseline sample the rice flour, from T2 toT10 were the blends of gluten free flours. The study concluded that White rice, chickpea and maize (corn) flour, being without gluten are good source for flour that does not cause any adverse reactions for people with gluten intolerance. The three flours are easily available commercially to the population. The study revealed that the analysis among the treatments T5 has significantly (p<0.000) highest ash and moisture content. It contain appreciable amount of protein and fiber content. T4 contain significantly (p<0.000) highest protein content with good water and oil absorption capacity. The study also concluded the treatments T4 and T5 contain the three selected flour in a ratio that may provide a good quality result and a healthy and nutritious alternative to the wheat flour.

Keywords
Composite Flour, Gluten free, Gluten intolerance.
ISOLATION AND IDENTIFICATION OF LISTERIA AND S.AUREUS FROM CHEESE AND MILK
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Abstract
Milk plays an important part in our daily life and can be processed into cheese, butter and cream. Storing milk in hygienic compartments instantly after milking may postpone the starting microbial load and stop the growth of microorganisms between stage of milking and its transportation to the processing plants. High amount of microbes exist in cheese all through aging and they assume a huge part in the development procedure. During production of unpasteurized milk and its products, contamination is possible by environment or from improper handling of human beings. S.aureus in milk mostly shed through udders of milk producing animals and listeria may come in cheese from manufacturing sites. The objective of my research was to evaluate the frequency of microbial contaminants in milk and cheese. Five types of cheese (semi hard cheese, semi soft cheese, hard cheese, soft cheese and cream cheese) and two types of milk (cow and goat) were used in my research. Cheese was collected from Lahore super market and milk was collected from sheds. Milk Samples were stored in refrigerator and cheese was firstly homogenized in normal saline and then dilutions were run on media. Colonies were then purified and biochemical tests were performed for identification. High no. of bacterial count i.e listeria is present in soft cheese and S.aureus in semi hard cheese, similarly high amount of listeria is present in raw goat milk and S.aureus in raw cow milk. The result indicates that strict preventive measures should be adopted to ensure contamination free milk products for the good health of all consumers.

Keywords
Milk, Cheese, Contamination, Bacterial Count, Consumers
Abstract
As Android based devices has gained popularity in recent years, these devices are prone to various security issues of malicious attacks and performance problems as well. Android OS complexity and vulnerabilities may facilitate sensor data manipulation and falsification that will have a high impact on data security and quality. Android based smart phones are not just phones but also portable computers, providing diverse services needed in life including calls, texts, emails, GPS, camera, Wi-Fi and Bluetooth apps. These apps keep and manage diverse intrinsic data as well as sensitive private information such as address books. Smart phones enable swift and easy data exchange via 3G, 4G and Wi-Fi. Thus, personal information stored on smart phones is prone to leakage. The research provides a distinctive solution to the security threats being found in the android operating system. This paper presents a data security and quality enhancement method based on amalgamating quantum attributes into the android operating system could effectively solve the issue raised. The paper provides a proposed architecture of Quantum Key distribution being embedded within the android OS to improve the efficiency. Quantum key distribution (QKD), which uses quantum mechanics to establish an absolute secure channel, thus ensuring that the security cannot be violated. However, the QKD is a new technology. The research unleashes the possible ways in which quantum could be effectively embedded in smart phones to resolve certain data security problems.

Keywords
Quantum key distribution, android operating system, Quantum computing
PUBLIC SPEAKING ENHANCER “RIGHT PLATFORM TO CONQUER YOUR FEARS”
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Abstract
When you speak in public, it enhances your self-confidence but it can also be an atrocious experience for some speakers who have stage phobia, stammering problem and many other psychological issues. To help those Public Speaking Enhancer will provide an immersive virtual reality simulation which allows the user to enter into such a realistic environment inside the application where user can improve his public speaking skills without even leaving seat. We present a virtual reality based app which is an advanced and unique idea for implementation of such virtual environments which will allow you to practice presentations in different scenarios by using a single app. The system design will help the people of different fields to improve their presentation skills by practicing on this app as many times as they want. When user launch the application and put on VR headset: User will become the part of that virtual environment and will be able to manipulate objects and can also perform different series of actions e.g., analyzing his presentation to get a detailed analysis of his presentation, during the presentation will face many distractions that will be there to help user to overcome the fear of public speaking, there will be questioning session which is basically a virtual interactive session of user with audience where questions will be asked from user related to the topic he has presented and have to answer it. Thus realistic public speaking environment can be experienced virtually by the user which will help to improve public speaking skills and boost confidence level.
EVALUATION OF THYROTROPIN WITH OVARIAN RESERVE MARKERS IN PRIMARY INFERTILE WOMEN OF REPRODUCTIVE AGE
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Abstract
Primary infertility is a reproductive issue in which the women are unable to conceive after one and a half year of unprotected intercourse. The causes of infertility are age factor, hormonal imbalance, genital and reproductive disease. The fluctuating levels of Thyroid Stimulating Hormones (TSH), gonadotropins and ovarian reserve markers affect the fertility in young women. The study was designed to assess the level of TSH, Follicle Stimulating Hormone (FSH), Luteinizing Hormone (LH), Anti-Mullerian Hormone (AMH) and the number of antral follicles in infertile women. Samples of total 99 primary infertile women were collected and levels of the hormones were tested by Electrochemiluminescence Assay (ECLIA) and Antral Follicle Count (AFC) was measured by ultrasonography. Then results were statistically analyzed by pearson correlation test using XL-Stat software. The patients were divided into three age groups i.e 25-31, 32-38 and 39-45 and their mean and standard deviation of TSH (1.452 ± 0.911, 1.543 ± 0.816, 2.034 ± 0.623), FSH (4.434 ± 2.077, 4.409 ± 1.920, 5.792 ± 1.741) and LH (6.825 ± 1.811, 5.892 ± 1.860, 6.515 ± 1.644) were determined by XL-Stat software. The regression analysis between hormones and ages demonstrated that age of infertile subjects is positively correlated with TSH and FSH whereas negatively correlated with the AMH, AFC and LH. The results concluded that TSH is positively correlated with FSH while negatively correlated with LH and AMH. This research will be beneficial for clinicians to aware women to monitor their biochemical parameters regularly and to maintain their levels by hormone replacement therapy.

Keywords
Primary infertility, Thyroid Stimulating Hormones (TSH), Follicle Stimulating Hormone (FSH), Luteinizing Hormone (LH), Anti-Mullerian Hormone (AMH), Antral Follicle Count (AFC), Electrochemiluminescence Assay (ECLIA).
ELUCIDATING HYPOGLYCEMIC AND HYPOLIPIDEMIC POTENTIAL OF MICROWAVE ASSISTED LEMON GRASS EXTRACTS USING ANIMAL MODEL

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Abstract
Cymbopogan citratus, commonly known as lemon grass, is an astonishing plant that has a rich lemon odor and flavor. Its leaves contain essential oil of amber color. Essential oil consists of various bioactive compounds which impart medicinal properties. Essential oil of lemon grass is rich in citral comprising of two isomers i.e. geranial and neral. Its aqueous extract is used in drinks. It is beneficial in several disturbances of nervous system, gastrointestinal tract and also contains anti-oxidant, analgesic, sedative, anti-inflammatory, anti-fungal, anti-microbial, anti-pyretic, diuretic and anti-spasmodic properties. Essential oil of Cymbopogan citratus also contains myrcene, citronellol, methyl heptenone, dipentene, geraniol, limonene, geranyl acetate, nerol, etc. These compounds have anti-fungal, counter irritant and anti-septic properties. It also contains iron, potassium, zinc, calcium, magnesium, manganese and copper. Lemon grass also contains flavonoids, anti-oxidants and phenolic compounds including glycosides, quercetin, kaempferol, luteolin, catechol, caffeic acid and chlorogenic acid which serve for a wide range of medical purposes. Extracts of lemon grass has shown significant health benefits in maintenance of type II diabetes mellitus and dyslipidemia. Lemon grass extracts can be obtained effectively via microwave assisted extraction (MAE) technique as compared to conventional hydro distillation technique. Microwave assisted extraction technique give better yield with minimum usage of resources. Lemon grass extracts can be used as a part of therapeutic diet for patients of diabetes and dyslipidemia.

Keywords
Lemon grass, Microwave assisted extraction, Citral, Hypoglycemia, Hypolipidemia
DETECTION AND QUANTIFICATION OF FOODBORNE PATHOGENS AND AFLATOXIN RESIDUES IN DRY FRUITS
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Abstract
Dry Fruits and Nuts are becoming progressively popular as a snack food because of their health benefits and convenience as a ready to consume food. Dry fruits and nuts are often consumed without further preparation and may likewise be formed into products such as peanut butter, halva and tahini. U.S Food and Drug Administration interpreted that tree nuts, peanuts, wheat have been classified as major food allergens so it is necessary to food products are properly labelled major food allergens. Peanuts, pistachios, almonds and cashew nuts have been examined bacteriologically safe food because of their low moisture activity. Most importantly focus has been on mycotoxins produced by fungi such as Aspergillus parasiticus & Aspergillus flavus. Bacteriologically, such as fecal indicator E.coli and number of pathogens such as Staphylococcus aureus and Salmonella isolated from cashew nuts, almonds, peanuts and pistachios, are incapable of growth, able to persist and number of outbreaks related to the ingestion of almonds, peanuts, pistachio and cashew nuts. Diseases associated with the consumption of such aflatoxin contaminated nuts results in immune system related disorders, hepatotoxicity, mutagenict, tetratogenocity and other cancer causing problems. The present review is an attempt to summarize all the emerging food related issues such as foodborne illness related to dry fruits and nuts, to ensure safety.

Keywords
Dry Fruits, Allergens, Aflatoxins, Foodborne Pathogens, Food Safety.
Abstract
As the trend to shop online is increasing day by day and more people are interested in buying the products of their need from the online stores. This type of shopping doesn’t take a lot of time of a customer. Customer goes to the online store search the item of his/her need and place the order. But, the thing by which people face difficulty in buying the products from online store is the bad quality of the product. Customer place the order only by looking at the rating and by reading the reviews related to the particular product. The thing, which takes some time of the user in the whole process, is to read the reviews. Reviews are the main source to be sure that whether the product is of good quality or not. Such comments of other people are the source of satisfaction for the new product purchaser. Here, it may be possible that the single negative review change the mind of the customer not to buy that product. In this situation, it might possible that this one review is fake. So, in order to remove this type of fake reviews and provide the users with the original reviews and rating of the products, we propose a system which takes the Web site related to the product, analyzes the reviews related to the products, and provides the customer with the original rating. Our proposed system analyzes the reviews of the product and finds how many of these are original and fake. We achieved 87% accuracy in detecting fake reviews by using intelligent learning techniques. The system detects not only English reviews but also finds the fake reviews of multiple languages including Urdu and Roman Urdu.

Keywords
Text Classification, Natural Language Processing, Machine Learning, Bigrams, Term Frequency And Inverse Document Frequency, Urdu.
SUBSTITUTED NA₂O-CAO-P₂O₅-SIO₂ BIO-CERAMICS
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Abstract
The effect of K₂O on the bio-activity of Na₂O-CaO-P₂O₅-SiO₂ based ceramic was studied. K₂O was added in a specific ratio in variation with Na₂O in the Na₂O-CaO-P₂O₅-SiO₂ system. The bio-ceramic samples were sintered at 950°C temperature. After sintering, the samples were placed in SBF solution to study their bioactivity. Stimulated body fluid was prepared by Kokubo’s method. The hydroxyapatite layer was developed on the surface of samples after soaking them in SBF solution. The developed hydroxyapatite layer was studied by different characterization techniques. These techniques include XRD, SEM, FTIR and AAS. The results showed an increase in the bio-activity of the bio-ceramic samples as Na₂O was partially replaced with K₂O. The addition of K₂O enhanced the bio-activity of the bio-ceramic samples.

Keywords
K₂O, Bio-Activity, Apatite Layer Formation.
PERFORMANCE ANALYSIS OF AODV AND DSR IN NS2
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Abstract
Ad hoc On-demand Distance Vector (AODV) protocol for routing implementation investigations have been
done only by the methods of simulation. The most important reason to use the methods of simulation is the
trouble of duplicating a real-life enactment. Whereas, in the simulator, a single logical component
accommodates the accessible and defined code. A system with many components, with no recorded data, would
be required for creating an implementation. The routing protocols are to be grasped by the implementation
developer along with all the system components and their interactions, which can be quite difficult. Ad hoc
routing protocols differ from the conventional routing protocols, so there rises the need to incorporate a new set
of features to support the routing protocol. A collection of wireless networks is Mobile ad hoc networks
(MANETs). These can be swiftly deployed as the radio network supporting multi-hop packets without help
from any basic or consolidated management. MANETs have a serious routing security problem. The current
protocols are not enough for the security requirements. A protected routing rules for ad hoc mobile networks,
known as TDSR. Which widens the routing protocol for DSR while entertaining the concept of Trust Network
Connect (TNC) to formulate secure behaviors for routing. In TDSR, trust score is the confidence between
nodes, which are of two types indirect and direct trust. Decisions concerning the routing and trust between
relation of nodes is facilitated by experience, observation, or results of routing and forwarding performance of
supplementary nodes. The evaluation of the protocols, AODV and DSR’s performances for IEEE
802.15.4/ZigBee is presented in this paper. Network simulator ns2 is being used.

Keywords
Aodv, Dsr, Ns2, Secure Routing, Trust Score.
ASSESSMENT OF OCCUPATIONAL HEALTH AND SAFETY IN SME’S OF MULTAN, PAKISTAN

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Abstract
Innumerable people die on regular basis due to various unattended occupational hazards in their workplace. Minimal data about occupational health and safety is present in Pakistan because majority of the accidents are not reported. Incidental ratio of occupational injuries and accidents are high in the country because of a large number of workers being exposed to hazardous working conditions. Small and medium-sized Enterprises (SME’s) play a vital role in our economy as it adds around 40% to the country’s GDP. Healthy workers are the most productive who can show best of their abilities if provided with a safe and healthy environment which will also help in reducing work related stress. This study was conducted to assess the occupational health and safety measure taken in the SME’s of Multan also monitoring the level of awareness among the workforce. The study is based on three main industries that included blue pottery industry, khaadi industry and handicraft industry. Surveys for both the workforce and the management were conducted. Majority of the workforce in are illiterate and thus unaware of the protective measures they need to adopt to overcome workplace hazards; this results in a large number accidents and diseases resulting in loss of valuable working hours in case of industry and livelihood in case of workers. As majority being uneducated are only concerned with earnings hence neglecting the basic measures they need to take while working resulting in lifelong regrets. The management takes advantage of the illiteracy and don’t invest in the health and safety trainings. To ensure that workers are working in a healthy and safe environment, the industries should take strong measures to promote occupational health and safety and develop policies to ensure its implementation.

Keywords
Occupational Health, Hazards, Accidents, Workplace Safety, Multan SME’s.
MOLECULAR CHARACTERIZATION OF A MULTIGENERATIONAL KINDRED AFFECTED WITH AUTOSOMAL RECESSIVE PRIMARY MICROCEPHALY
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Abstract
Autosomal recessive primary microcephaly (MCPH) is a neurodevelopmental disease which present at the time of birth. It is a disorder in which head circumference is at least 2 SD below according to the mean of their age and sex. Here in case report we describe four patients, two girls and two boys, with severe congenital microcephaly, developmental delay, epilepsy, and failure to thrive. MRI showed that affected is true microcephaly with thick gray matter and hemispherical asymmetry and corpus callosum and white matter hypoplasia. After linkage analysis with most prevalent loci in Pakistan, Next generation sequencing was done with the panel of 33 genes. In these 33 gene given genes are associated with primary microcephaly ANKLE, ASPM, CASC5, CDK5RAP2, CDK6, CENPE, CENPJ, CEP135, CEP152, CIT, HsSAS-6, MCPH1, PHC1, STIL, WDR62, ZNF335, apart from these microcephalic gene, other genes ATR, BUB1B, CDC6, CDT1, CEP63, DNA2, MAP4, MSMO1, NDE1, NIN, ORC1, ORC4, ORC6, PCNT, PLK4, PNKP, RBBP8, RNU4ATAC, TUBGCP6, TUBGCP4 are not directly associated primary microcephaly but role of these genes found in DNA replication, DNA stability, regulation of spindle assembly, assembly and organization of microtubules and centriole biogenesis, which shows that mutation in these gene may be responsible for primary microcephaly. Next generation sequencing results revealed that no mutation is present in these gene.
DEVELOPMENT OF NUTRITION EDUCATION PROGRAM USING HEALTH BELIEF MODEL TO PROMOTE NUTRITIONAL BEHAVIORS CHANGES FOR OSTEOPOROSIS PREVENTION

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Abstract

Osteoporosis prevention education program was intended to increase the anticipatory behaviors using Health Belief Model. The undertaken study was conducted to examine the relationship between osteoporosis knowledge, beliefs and dietary calcium intake among young women. The perceived susceptibility, severity, benefits, barriers and self-efficacy related to osteoporosis prevention were also assessed in a quasi-experimental study design. The sample comprised of 100 college students aged 20-25 years. Two general subjects groups were selected conveniently and one was selected as experimental group (n=50) and other as control group (n=50). Per and post testing method was used to draw results. Follow-up was taken after two months to assess the effectiveness of nutrition education program. Osteoporosis Knowledge Test, Osteoporosis Health Belief Scale, and Osteoporosis Preventing Behaviors Survey tools were used to collect data. The results showed that the nutrition knowledge of students was significantly improved to p-value 0.001. Participants did not perceive themselves as susceptible to osteoporosis and perceived minimal barriers to calcium intake. Post testing findings showed a significant relationship between nutrition education and increase in nutritional knowledge related practices, increases in severity, susceptibility, perceived benefits, decrease in barriers to exercise and calcium intake with p value < 0.05 for all variables among experimental group. It was determined that health belief model is an effective tool for development of nutrition intervention program to bring change in the nutrition behaviors and nutrition education as well as to increases the knowledge of participants about osteoporosis.

Keywords

Osteoporosis, Health Belief Model, Nutrition Education Program, Behaviors Changes, Self-Efficacy.
HETEROGENEITY MODEL FOR MOBILE CLOUD COMPUTING AND ITS SECURITY CHALLENGES

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Abstract

Mobile cloud computing (MCC is a mixture of cloud computing and mobile computing) provide to a certain extent many settlement like battery timing, memory, consistency and scalability. Though, still there some sort essential elements, those should be discussed and make their implementation effective in MCC. Some of its most prominent challenges include wireless security, cloud privacy and certainty, data bandwidth and transfer rate, synchronizing and managing the data, battery capacity, energy efficiency (EE), and heterogeneity. In this paper we present a detailed overview of mobile cloud computing. The main problem in MCC is security privacy and trust, so we are trying to solve this issue using algorithms and other techniques. Also, we discuss MCC, its challenges and proposed a heterogeneity model for cloud computing.

Keywords

EFFECT OF NUTRITION EDUCATION INTERVENTION ON GLYCATED HAEMOGLOBIN (HBA1C) IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Abstract

The worldwide prevalence of diabetes mellitus has risen dramatically in the developing countries over the past two decades. Regular screening of adults is essential for early detection and care. The purpose of the intervention study was to provide nutrition education in an effort to improve diabetes knowledge and glycemic control of type 2 diabetes. Fifty participants aged 35 to 60 years with type 2 diabetes were selected from American Diabetic clinic (private clinic) Gujranwala. Twenty five participants were recruited in both intervention and control group. Hemoglobin A1C levels and knowledge regarding diabetes was compared from pre-intervention phase of nutrition education to post intervention phase three months later. Data was analyzed using independent sample t-test. Results showed a statistically significant improvement in diabetes knowledge among participants who followed the intervention for three months; the compliance to self-monitoring of blood glucose (SMBG) improved in experimental group from 36% to 76%, while no improvement was observed in control group. Carbohydrate intake of the experimental group in pretest was (M=380gram), whereas after intervention it decreased to (M=297), similar results were seen for protein and fat intake. The intervention also improved nutrition knowledge of the participants as indicated by nutrition knowledge score of experimental group in post-test (M=28.12, SD=2.02, p=0.000); whereas the pretest scores indicated low nutrition knowledge (M=18.92, SD=2.44, p=0.656). Results showed a statistically significant improvement in diabetes knowledge among participants who followed the intervention for three months; as indicated by HbA1c level in experimental group (M=8.88, SD=1.98, p=0.001). Whereas no significant change was observed in control group as indicated (M=11.44, SD=2.66, p=0.319). The BMI of the participants also improved significantly after the intervention in experimental group as indicated by (M=29.72, SD=4.15) as indicated by the p-value of 0.034, no improvement was seen in control group. The findings suggest that the implementation of nutrition education program can improve diabetes knowledge and the glycemic control of the patients.

Keywords
HbA1c Test, Type 2 Diabetes, Glycemic Control.
POTENTIAL OF METAL ORGANIC FRAMEWORKS (MOFS) TO TREAT INDUSTRIAL WASTEWATER IN PHOTOCATALYTIC MEMBRANE REACTOR (PMR)
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Abstract
With an exponential growth, the drive to improve the water quality, remove the potential pollutants used in industrial processes and reuse wastewater have combined the recent advances to stimulate water quality control at an unprecedented scale. The removal of hazardous substances from water and wastewater in an efficient way has drawn considerable social and scientific concern in recent years. The wastewater can include organic matters and/or different trace contaminants. Nevertheless, industrial and pharmaceutical contamination needs to be addressed especially in developing countries. Photocatalytic membrane reactors (PMRs), a hybrid technology, holds great potential in industrial wastewater treatment in which physical operation of membrane filtration and degradation of organic pollutants is achieved by photocatalysis simultaneously. In past few years, PMRs have developed rapidly and have been the object of sound investigation due to some unique advantages. However, photocatalytic properties of the photocatalysts are also a major concern in relation to the water and wastewater treatment, i.e., regarding the photocatalytic degradation of organic compounds and inorganic pollutants, as well as photocatalytic disinfection. Recently, photocatalytic metal-organic frameworks (MOFs), commonly recognized as “soft” analogues of zeolites, is a new class of nano-porous materials with various topologies, adjustable pore size, controllable properties, large surface area, as well as acceptable thermal stability. Hence, this presentation will cover the potential of MOFs in PMR in terms of improving permeate quality and reducing membrane fouling due to photodegradation of pollutants in the water and wastewater. The results of membrane fouling mitigation and photodegradation performance of zeolitic imidazolate framework-8 (ZIF-8) in comparison with p25 Degussa TiO2 nanoparticles in PMR will be presented.

Keywords
Photocatalytic membrane reactor, metal-organic frame works, membrane fouling, water quality
SYNTHESIS OF CS-INCORPORATED NIO₂ NANOPARTICLES TO ENHANCE THE PERFORMANCE OF PEROVSKITE SOLAR CELLS
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Abstract
Solar energy is one of the best clean sources of energy that have no environmental issues. Solar cells are used to convert sun light into other forms of energy. Many kinds of solar cells are invented from last few years which have different efficiency, but the Perovskite solar cell is one of the best solar cells because of its high efficiency and stability. Thermal stability issue is also present in these cells. For perovskite solar cells, Cs incorporated NiO₂ have been used as holes transporting material due to its good stability, high holes mobility and easy processability. The precursor solution of perovskite has been prepared by FAPbI₃, MAPbBr₃, and CsI solutions have been mixed in a ratio of 5:1:0.3. The surface morphology and elemental composition of perovskite solar cells with NiO₂ nanoparticles and Cs-doped NiO₂ nanoparticles have been examined by Field Emission Scanning Electron Microscopy (FE-SEM) and EDX, the crystal structure have been studied by X-ray diffraction (XRD) and the optical properties have been described by light absorption in UV-VIS spectroscopy.

Keywords
Perovskite Solar Cell, Nickel Oxide.
SYNTHESIS OF GRAPHENE-DOPED AG NANO PARTICLES TO ENHANCE THE PERFORMANCE OF PEROVSKITE SOLAR CELL

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Abstract
Solar energy is one of the best renewable sources of energy, many solar cells have been invented but perovskite solar cell is known for their best efficiency, but it has some performance issues thermal stability, moisture, and many others. So, to remove these stability issues and to enhance their performance, silver Nano particles and graphene doped Nano particles have been potentials application for solar cells, the graphene-based materials is highly depending upon dispersion of nanoscale building block on graphene sheets. A thin film of Go doped Ag Nano particles are used as hole transport layer, graphene oxide have been prepared by Hammer method by using graphene powder, NaNO\textsubscript{3}, concentrated H\textsubscript{2}SO\textsubscript{4}, H\textsubscript{2}O\textsubscript{2}, and KMnO\textsubscript{4} and silver Nano particles are prepared by sol gel method by using raw material AgNO\textsubscript{3}, CH\textsubscript{3}COOH, NaOH and N\textsubscript{2}H\textsubscript{4}.H\textsubscript{2}O. The quantity of Ag Nano particles is played a vital role to enhance the performance of perovskite solar cell. After successfully synthesized Ag Nano particles they were annealed at 400\textdegree{}C, 600\textdegree{}C, and 800\textdegree{}C to study the plasmonic response, the temperature and doping concentration of nanoparticles are able to change their optical and structural response have well studied under X ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (SEM) and Fourier transforms infrared microscopy (FT-IR), then Go-Ag Nano particles layer is used in perovskite solar cell for the better performance of perovskite solar cells.

Keywords
Graphene, Silver Nanoparticles, Perovskite Solar Cells
STRATEGIC DESIGN OF GRAPHENE PLASMONIC NANOCOMPOSITE BASED PHOTOANODE FOR HIGHLY EFFICIENT PLASMONIC DYE SENSITIZED SOLAR CELLS

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Abstract
Renewable energy resources play an important role in the global increase of energy demand. This research has been performed to enhance the efficiency of Plasmonic DSSCs by harvesting the maximum sunlight. In this research, a nanocomposite of Graphene, Cu and TiO₂ Nanoparticles have been used to fabricate the Plasmonic Dye sensitized solar cells (PDSSC’s). Furthermore, simple DSSC with TiO₂ and PDSSC with Graphene/Cu/TiO₂ have been synthesized by using the sol gel techniques. The Graphene/Cu/TiO₂ nanocomposite have enhance the efficiency of PDSSC’s due to the Plasmonic effect. Different equipment’s such as X-ray diffraction and scanning electron microscope (SEM) have been utilized for the analysis of samples. Due to limited resources of fossil fuels it is necessary to find out other ways for utilization of renewable energy sources. Although DSSCs are widely used in solar energy applications the performance of these cells is low. Transformation of the electron is necessary to achieve high conversion efficiency. Efficiency can be increased by increasing optical absorption. Furthermore, higher efficiency can also be obtained by increasing electron injection by minimizing the large band difference between TiO₂ layers. The band gap of TiO₂ is larger, therefore, nanoparticles of certain materials are used to reduce it and to make DSSC more effective. To increase efficiency of DSSC’s cells Graphene, Cu incorporated TiO₂ nanoparticles will be utilized. Efficiency have been increased due to Plasmonic effect of these nanoparticles.

Keywords
Graphene, Copper Nanoparticles, TiO₂ Nanotubes.
GRAPHENE PLASMONIC NANOCOMPOSITE BASED PHOTOANODE TO ENHANCE THE PERFORMANCE OF DYE-SENSITIZED SOLAR CELLS

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Abstract
An efficient photoanode have been that which contained the following properties such as being favorable energy band gap, high dye uploading, high transparency and admirable ability in charge transport (electron). In this research, we have study about the dye sensitized solar cell (DSSCS) to enhance its performance. In this regard, we have integrated the plasmonic nanoparticles into PV devices to increase the light absorption, charge transport (electron) and modify the DSSCS. The graphene oxide will be condensed with gold (Au) nanoparticles. The power conversion efficiency of plasmonic photoanodes containing Au and GO nanoparticles have been enhanced. Graphene and Ag nanowires have enhanced the charge transport (electron) in the DSSCS to further improve the PCE. TiO₂ nanoparticles have been used in dye sensitized solar cells due to high surface area for dye uploading. Sometimes TiO₂ nanoparticles slow down the electron transport in DSSCS. This issue has been resolved by using one dimensional nanostructures, like nanorods, nanotubes. The surface morphology, elemental composition, crystal structure and optical properties of Au/TiO₂ nanocomposite will be characterized by SEM, TEM, EDX, X-ray diffraction and UV/Vis Spectroscopy, respectively.

Keywords
Graphene, Plasmonic, Photoanode, Dye-Sensitized Solar Cells.
GREEN TECHNIQUES; A WAY TOWARDS ENHANCED BIOACTIVITY OF PHYTOCHEMICALS
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Abstract
All the plant species that exist on this earth have vast array of phytochemicals with immense curative potential that has subsequently revived the perception of ethno pharmacology. The concept of traditional plant based medication has now evolved into mainstream health systems. Various techniques are being employed for the extraction of biologically active constituents of plants that involve mass transfer of these beneficial compounds from plant matrix to the isolating medium. The selection of extraction techniques has a profound effect on the activity of these phytochemicals as they are present in closed structures as well as sensitive to thermal degradation. The application of conventional extraction methods like Soxhlet extraction, Maceration and Hydro distillation results in high extraction time, low extraction rate, high solvent input and thermal decomposition. This has led to explore some other ways for the isolation of these beneficial components from the plant species. In this regards, some other methods has been now investigated that are eco friendly, high output of the component of interest as well as economical. It includes High Pressure Processing, Ultra sounds assisted extraction, Microwave assisted extraction and Pulse Electric Field assisted extraction, Supercritical Fluid assisted extraction. These are termed as “Green Technologies” because of their eco friendly nature and are gaining attention these days owing to their enormous benefits like improved biological activity, rapid, convenient, low operating temperature and high extract output. These processes have been found to be efficient for extraction of phenolic compounds, flavonoids, carotenoids, caffeine and other bioactive components from different matrixes.

Keywords
Phytochemical, Extraction Techniques, Eco Friendly, Extraction Rate.
RESISTANCE/SUSCEPTIBILITY TRENDS AGAINST GASTROINTESTINAL NEMATODES IN SMALL RUMINANTS IN PUNJAB

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Abstract
Benzimidazole resistance is an emerging trend especially in *Haemonchus contortus* a gastrointestinal nematode, at an alarming speed. This resistance appears to involve mutations in the gene encoding β-tubulin isotype 1 (β-tubulin-1). The present study was carried out to find out the variation existing in β-tubulin-1 which is directly involved with drug binding capacity involving microtubules polymerization. DNA of adult nematode *H. contortus* was extracted using standard protocols, amplified followed by sequencing. Out of 100 worms investigated, 74 showed benzimidazole susceptible gene while 26 were resistant indicating single nucleotide mutation at amino acid 200 TTC/TAC. In addition, 24 worms showed several regions of consistent difference indicating single nucleotide polymorphism (SNPs) at various positions in coding region. It has been concluded that resistant alleles for benzimidazole conferring anthelmintic resistance is prevalent and reported for first time in the local population of *H. contortus* of north-east Punjab, Pakistan.

Keywords
Anthelmintic Resistance, Small Ruminants, Haemonchus Contortus, SNPs, B-Tubulin.
Abstract
A series of transition metal(II) complexes of new Schiff base ligand were synthesized by the condensation of sulfa drug and aromatic aldehyde. The Schiff base ligand and its transition metal complexes were characterized by using different instrumental techniques like microanalysis, thermogravimetric analysis and spectroscopy. The synthesized ligand and metal complexes were subjected to biological studies. The studies showed the enhanced activity of metal complexes against one or more species as compared to the uncomplexed ligand. The data showed that transition metal complexes have significant improved antibacterial activity than parent drug.

Keywords
Schiff base, metal complexes, sulfa drug, aldehyde, Biological
FABRICATION, CHARACTERIZATIONS AND APPLICATIONS OF ANATASE TiO$_2$ NANOTUBES

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Abstract

TiO$_2$ is a low cost, nontoxic, naturally occurring, multifunctional material used in applied science such as solar devices, environmental, biomedical and many other applications. This review has been focused on the several different applications of commercial TiO$_2$. TiO$_2$ nanotubes have been drawn enormous attention owing to their distinctive architectural and physical properties. Anatase TiO$_2$ nanotubes film has great potential to improve to performance of Ti implants as a surface coating due to their higher surface area. Electrochemical anodization method has been proven to be the most efficient and low cost technique to fabricate the well aligned nanotubes. This review describes the fabrication of self-organized TiO$_2$ nanotubes layer by the anodizing of Ti foil at different conditions (time, voltage, concentration of NH$_4$F in electrolyte with ethylene glycol and water content) at room temperature. TiO$_2$ nanotubes are fabricated in electrolyte solution containing ethylene glycol with 2 Vol% of DI water and NH$_4$F of 0.25 wt% at the voltage 50V. The surface morphology, inner diameter and length of TiO$_2$ nanotubes varied with the electrochemical anodization parameters. The structure, morphology and photocatalytic properties of anatase anodized TiO$_2$ film samples are characterized by Scanning electron microscopy (SEM), XRD, TEM, EDX, UV/Vis. This review attempts to cover all the aspects including fabrication, characterizations of TiO$_2$ nanotubes and it also includes applications in several field in comprehensive way.

Keywords
Anatase TiO$_2$ nanotubes, Anodization method.
FOLIAR APPLICATION OF POTASSIUM NITRATE CAN IMPROVE GROWTH AND PRODUCTIVITY OF POTATO AT HIGH SOIL REACTION

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Abstract
Potato (Solanum tuberosum L.) is an exhaustive crop with regard to utilization of soil mineral nutrients. Soil application of nitrogen is prone to leaching and volatilization while other nutrients get fixed because of soil reaction. Foliar application can be used as a supplement under such conditions. This study was conducted to evaluate the impact of potassium nitrate application on potato crop. Potassium nitrate @ 0, 1, 2, 3 or 4% was sprayed on potato varieties SH-704 and Sante, grown in high pH (reaction, above 8.0) soil. Results of this experiment showed that foliar application of 3% potassium nitrate resulted in a significant increase of plant height (cm), number of tubers per plant, number of marketable tubers, tuber fresh weight (g), tuber dry weight (g) and tuber specific gravity (g/cm³). While, 4% potassium nitrate resulted in a significant increase in leaf chlorophyll contents (CCI), tuber yield per plant (g) and yield per plot (kg/37.5ft²). Moreover, 2% potassium nitrate resulted in a significant increase in number of leaves per plant and weight of marketable tubers (kg). Total phenolics contents (mg GAE 100 g⁻¹) and total soluble solids (°Brix) were unaffected by foliar application of potassium nitrate. Based on these results, it can be concluded that farmers can spray potassium nitrate on their potato crop to foster growth and productivity, particularly in soils where nutrient availability to plant is limited due to high soil pH.

Keywords
Solanum tuberosum, Soil pH, KNO₃, Nutrient availability, Sante.

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SIMULTANEOUS DETERMINATION OF IMIDACLOPRID AND ACETAMIPRID INSECTICIDES BY HPLC USING A MODIFIED QUECHERS EXTRACTION TECHNIQUE

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Abstract

A simple and sensitive reverse phase HPLC method was developed for simultaneous determination of two neonicotinoid insecticides including acetamiprid and imidacloprid in milk. For concurrent identification and quantification of these insecticides, Quick Easy Cheap Effective Rugged and Safe (QuEChERS) extraction method was applied. These insecticides were firstly extracted from milk using acetonitrile and subsequently cleanup by QuEChERS technique prior to HPLC analysis. Water and acetonitrile mixture (75:25 v/v) with the addition of 0.1 ml phosphoric acid (10%) was used as a mobile phase for separation of acetamiprid and imidacloprid using the stationary phase of C\(_{18}\) column (250 x 4.6 mm; 5\(\mu\)m) at the flow rate of 1 ml/min. Diode array detector was used for its quantitative estimation at a wavelength of 230 nm. The developed method was validated according to defined guidelines which include limit of detection, limit of quantification, linearity, precision, accuracy and recovery. Limit of detections for both insecticides was 30 ppb, while limit of quantification was 100 ppb. The current method showed the good linearity (R\(^2\) = 0.999) over the range of 100 - 1000 ppb for both insecticides. Relative standard deviations of the six replicates of three quality control standards (300, 500 and 900 ppb) for both insecticides were found to be less than 1% while recovery of both these insecticides were within the range of 97.5 to 101%. The established method is simple, sensitive and accurate and can be used for monitoring of acetamiprid and imidacloprid in milk.

Keywords

Insecticides, Acetamiprid, Imidacloprid, QuEChERS, HPLC
INFLUENCE OF THE STUDY HABITS AND INTRINSIC MOTIVATION ON THE ACADEMIC ACHIEVEMENT OF UNDERGRADUATE STUDENTS

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Abstract

Study habits and attitudes are the necessary basic skills to organize and complete academic learning tasks. These are the important constructs when addressing the academic performance of students in education (Robbins et al., 2004). Several research studies (Robyak, Downey, & Ronald, 1979; Landsberger, 2005; Nagaraju, 2004) on educational problems have pointed out that many school students work below their expected level of learning because of the lack of good study habits. Children and youth are the pillars of hope for any nation or society for the better future and therefore special attention must be given to provide them the best services especially in terms of education. In the field of education, academic achievement has remained in focus for research among educational psychologists and researchers. About three decades ago, the excellence in academic performance was viewed in terms of scores alone and no importance given to the skills (Sirohi, 2004). An underachiever or low academic achiever was viewed as the one whose academic performance falls below the normative range of scores (Nagaraju, 2004). But now the evidences of studies (Lin, 2001) have made it clear that there are many factors responsible for underachievement like, motivation (Deci & Ryan, 1985), study habits and attitude towards education (Sirohi, 2004), concentration, self-confidence, fear of examination, anxiety, self concept and other (McCombs & Marzano, 1990; Lin, 2001). Findings of the previous studies (Nagaraju, 2004; Young, 1998) had pointed out very clearly that poor study habits and attitudes not only become the cause of the low academic achievement but also develop the feelings of worthlessness in the students. These students need special attention and focus because due to the presence of frustration they developed the feelings of learned helplessness and cutoff from the learning environment of the educational institutions. This study was designed to analyze the study habits and intrinsic motivation of the undergraduate students. Data were collected from high achievers and low achievers to assess the differences in the study habits and intrinsic motivation of the students. The sample of the study consisted of 400 participants. Data were collected through purposive sampling, because data were recruited from high and low achievers only. It was assumed that there would be significant differences in the study habits of the high and low achievers. It was also assumed that high achievers would score higher on the time management, concentration, and good study skills. Findings will be beneficial for the teachers, parents and students to understand the academic problems of the students.

Keywords
Study habits, Intrinsic Motivation, Academic achievement, high achiever, low achiever.
RAPID DEFLUORIDATION OF DRINKING WATER BY CALCIUM CARBONATE NANOADSORBENT: CHARACTERIZATION, ADSORPTION STUDIES AND REAL SAMPLES’ TREATMENT

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Abstract
Ground water contamination with fluoride is a serious issue all over the world leading to its excessive intake and consequently to multiple health issues. This research work is hence designed to perform assessment of water quality in relation with fluoride contamination in Lahore city, Pakistan followed by the development of nano-adsorbent that can cost effectively remove high levels of fluoride from the water and afterwards designing the process for effective and time-efficient removal of fluoride from real drinking water samples. In this regard calcium carbonate nano-adsorbent having the average particle size of 14.6 nm was prepared and characterized by powder XRD, FT-IR, SEM/EDX and AFM. Physico-chemical parameters were studied in batch mode and revealed high adsorption capacity (i.e. 754.36 mg g⁻¹) at room temperature and neutral pH within 10 minutes. The kinetic isotherms (General, pseudo-first and pseudo-second order), diffusion studies (Intra-particle diffusion and particle diffusion models) and adsorption models (Langmuir, Freundlich, Liu and Redlich-Peterson) were also employed to check the suitability of adsorption process. The applicability of the nano-adsorbent to the fluoride contaminated real drinking water samples led to 98-100% defluoridation.

Keywords
Water quality assessment; High adsorption capacity; time-efficient; adsorption models; kinetic models.
ASSESSMENT OF DIETARY HABITS AND NUTRITIONAL STATUS OF PREGNANT WOMEN VISITING SIR GANGA RAM HOSPITAL LAHORE

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Abstract
Maternal malnutrition and imbalanced dietary intake affects the health of mother and pregnancy outcome. The aim of this interventional study was to assess the nutritional status and dietary habits of pregnant women and the effect of nutrition education intervention on dietary habits & nutritional status of these women. A sample of 215 pregnant women visiting Sir Gangaram Hospital, Lahore for first antenatal visits was enrolled via non probability purposive sampling technique. While those with chronic illnesses, GIT problems, excessive vomiting and already taking supplements were excluded from the study. Baseline demographic & dietary data, blood sampling and anthropometry measurement were recorded followed by nutrition counseling. Follow up results after 2 months showed positive effect of nutritional counseling with improvement in their total caloric intake. There was an improvement in the diet of 37% women as they started to consume food according to the recommendations of the “Food Guide Pyramid”. Similarly, fruit intake of participants increased from 39% to 55% and ‘Dairy Group’ intake improved from 35% to 62% on daily basis. Improvement in iron storage status was also reported with reduction in iron depletion status up to 26.8% as compared to base line (36.0%). Similarly, reduction in Vitamin D deficiency from 73.8% to 36% validated the success of the study.

Keywords
Nutritional Status, Dietary Habits, Malnutrition, Anemia, Vitamin Deficiency
FUNCTIONAL FOOD: A MULTIFARIOUS APPROACH TOWARDS HEALTH PROMOTION AND WELL-BEING
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Abstract
Now-a-days, functional foods are on escalating demand owing to their health promoting trends among masses over the globe. Functional foods are defined as the physiologically active components that resemble conventional foods or consumed as part of usual diet that provide health benefits or performance beyond the basic nutritional functions. Macronutrients, minerals, vitamins, probiotics, spices, herbs as well as dietary supplements extracted from plant, animal and microbial sources are major constituents of this group. Functional foods contain a wide range of natural bioactive compounds that contribute an excellent opportunity for their use as array of value-added ingredients and food applications for alleviating health issues. Moreover, they possess antioxidant, anti-tumor, anti-bacterial, anti-hypercholesterolemic, anti-hypertensive characteristics for maintain quality of life by reducing risk of various disease conditions in humans. Hence, functional food developments are on earlier stages and knowledge about the certain food components is more extensively recognized for long term health and wellbeing. Agriculturists, food producers, retailers, health care workers, educators and consumers all have motivated to play their roles in ensuring the basic concepts about the importance of functional foods concerning nutrition.

Keywords
Functional foods, bioactive components, nutrition, health benefits, medicinal attributes
CLONING, EXPRESSION AND BIOCHEMICAL CHARACTERIZATION OF THERMOSTABLE ALKALINE SERINE PROTEASE FROM *Bacillus haloduranes*

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Abstract
A putative protease encoding gene (Apr) from alkaliphilic bacterium *Bacillus haloduranes* was successfully cloned and expressed in *Bacillus subtilis* expression system. Enzyme was partially purified and the molecular weight of mature peptide was estimated as 28 kDa on SDS-PAGE. Zymographic analysis also showed the clear band on the same position. The partially purified enzyme was investigated for activity inhibition in the presence of various protease inhibitors. Serine protease nature of this enzyme was confirmed based on inhibition by PMSF. Biochemical characterization of partially purified enzyme demonstrated that it was highly active in alkaline conditions (pH10-13) and at high optimum temperature (60°C). The protease activity was studied in the presence of various oxidants and surfactants. Enzyme showed high stability in presence of all additives which suggested the potential application of *Bacillus haloduranes* protease in industries specially the detergent market.

Keywords
Thermostable alkaline protease; Detergent/oxidant-tolerant; Expression; *Bacillus subtilis*; Biochemical characterization.

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‘Science, Technology and Innovation’
MOLECULAR IDENTIFICATION OF BACTERIAL STRAINS ISOLATED FROM SAISHU, HISPANG AND HARGARSIA SKARDU
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Abstract
Bacteria are widespread microorganisms which have evolved their genomes to encode for such physical adaptations that enable them to survive in harsh environmental conditions. Bacteria can survive a wide range of cold temperature i.e. from below 0°C to 200°C. This study specifically focuses on the cold adapted bacterial flora of the regions of Skardu, Pakistan. In the present study, pre-isolated 19 bacterial strains (1a-1g, 3a-3i, 6a-6c) were revived from glycerol stocks. These strains had been isolated from cold region of Skardu, Pakistan i.e Saishu, Hispang and Hargarsia. The strains were purified by streak plate methodology and were characterized for colony morphology and gram staining profile. Eleven out of nineteen strains were found to be gram negative and the remaining nine were gram positive. Ten isolates were found to be bacilli, two isolates were cocci and two were cocobacilli. Strains were identified on molecular level by sequencing 500 bp of 16S rDNA fragment. For this, 500 bp fragment of 16S rDNA gene from isolated DNA was amplified by using universal primers and was then subjected to Sanger sequencing. The sequencing results of 10 out of 19 strains were received which were interpreted using MEGA 7.0. Phylogenetic tree was constructed using maximum parsimony algorithm and the FASTA sequences of similar homologs obtained by BLAST, which showed high taxonomic relationship of 1c and 6b with Exiguobacterium oxidotolerans strain N1-4P and 1c was also related to Exiguobacterium undae strain South I 4A. 1d had 98% similarity with Enterobacter cancerogenus strain CR-Eb1 and Enterobacter asburiae strain S2-253. 1f showed that it was taxonomically related to Leclercia adecarboxylata strain USDA-SRS-USMARC-60222 whereas 3g and 3h were more related to Acinetobacter sp.strain LXJ127 and 3i to Pseudomonas synxantha strain and Pseudomonas sp LH1G9. 3a showed only 93% similarity results with Pseudomonas korneesis. 6a showed that it was related to Pseudomonas simiae strain KB6 whereas 6c phylogentic analysis showed its resemblance to Pseudomonas mucidolens strain LMG 2223. 1d and 1f belonged to the family Enterobacteriaceae. 3a, 3i, 6a and 6c belonged to family Pseudomonadaceae, whereas 3g and 3h are of family Moraxellaceae. 1c, 6b showed relationship with family Bacillaceae. Subpopulation mean diversity was also calculated. For the confirmation of the novelty of 3a strain G+C content calculation, ITS sequencing and DNA-DNA hybridization techniques can be further used.
Abstract
Nowadays due to the scarcity of fresh water for irrigation many alternative ways have been in use and most important of them is usage of wastewater for this purpose. This study was designed to investigate the effect of application of untreated wastewater of Daik drain on the growth parameters of *Triticum aestivum* and *Solanum melongena*. For this purpose a total of ten treatments of effluent (10% to 100%) were formed and their effect on number of leaves, shoot and root length, fresh and dry weight biomass of *T. aestivum* and *S. melongena* was investigated. A control setup was also run to compare for the differences in the growth parameters of both species with the application of untreated wastewater. After four weeks of experimentation, in *T. aestivum* the highest mean shoot length (8.8cm), root length (8 cm), fresh weight (0.39g) and dry weight (0.183) was recorded at 70% of effluent concentration. While for *S. melongena* the highest mean shoot length (5.11cm), fresh weight (1.18g) and dry weight (0.26g) was recorded at 100% and highest mean root length (7.4 cm) was recorded at 50% of the effluent concentrations. All of these growth parameters were recorded minimum in control and at low concentrations of effluent. A significant correlation of effluent treatments was found with shoot and root length ($p < 0.001$), number of leaves ($p < 0.05$) and fresh and dry weight biomass ($p < 0.01$). Overall the growth was enhanced with the effluent treatments showing its future potential application in the field of agriculture in water stressed areas in Pakistan.

Keywords
Effluent; shoot length; fresh weight, dry weight; growth parameter.
BILINGUAL SENTIMENT ANALYSIS OF POLITICAL TWEETS
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Abstract
The advent and growth of social media platforms like Facebook, Twitter and Instagram have not only made people to use it for connecting across the globe and sharing information but also to give their opinions, reviews and share experiences. The sentiment expressed in this user generated content (UGC) when analyzed could be helpful for various reasons such as predictive analysis, summarization of reviews, measuring popularity, acceptance of products, and much more. Advancements in machine learning methods used for natural language processing, availability of UGC in enormous amount on these social platforms and its possible retrieval has resulted in increased textual sentiment analysis. In this regard, various researches and studies exist, but all these studies focus on resource-rich languages like English, Chinese and Arabic. However, Urdu despite being spoken by about 30 million people across the world lacks any such research. Moreover, most of the people who speak Urdu language often use Roman Urdu to express their views, feelings or experiences over the Internet. With the increase use of Roman Urdu by native speakers there is a need for such a system which can analyze such content and give suggestions or make conclusions. Keeping this in view, a system has been proposed which performs sentiment analysis of bilingual (English and Roman Urdu) data. Tweets related to the 2018 Pakistan Election have been used as the data in this system. Lexicon and machine learning (ML) based hybrid approach has been used. Collected tweets have been preprocessed, labeled, and fed to the ML models to train them. Trained models have been evaluated and results are gathered. Apart from calculating system accuracy, various analyses have also been performed regarding the political parties and their leaders based on the sentiments obtained from the developed system.

Keywords
Sentiment Analysis, Machine Learning, Lexicon, User Generated Content, Pakistan Election 2018
CRYPTOCURRENCY - A REVIEW
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Abstract
A cryptocurrency is a digital technology designed for secure financial trades using cryptography techniques. In cryptocurrency, the information transforms to uncrackable code, which makes it difficult to forger. It uses decentralized control based on block chains contrary to the centralized banking systems. The first ever cryptocurrency was the Bitcoin, a block chain-based cryptocurrency developed which is still the most popular and valuable. Various cryptocurrency techniques exists that use encryption, private-public key pairs and hashing functions to secure the transmission. Cryptocurrencies makes the transaction of information easy between two parties without the need for a third party. This paper gives a brief introduction on cryptocurrency and detailed review on different cryptocurrencies like bitcoins, block chains, Ethereum, Fintech, distributed ledgers and ripple. Moreover, with the rapid growth of technology, changing and implementing new cryptocurrency techniques to secure information becomes a constant need, and for that purpose, our research provides comparison between various cryptocurrencies and their applications.

Keywords
Cryptocurrency, cryptography, secure financial Transactions, bitcoins, block chains, Ethereum, Fintech, distributed ledgers and ripple.
**METHODS AND TECHNIQUES IN MENTAL MATHS TO ENHANCE THE THINKING POWER**

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**Abstract**

Mental Math is all about the calculations that we do in our mind without the use of pen, paper or calculator. This research paper determines the methods and techniques of Mental Math and the interpretation of the related algorithms. After analyzing the algorithms, the researcher managed to find some interesting techniques in order to speed up the thinking power. The study focuses on extension and then further extension of the techniques. The research on Mental Math has been conducted, by keeping in mind its importance in our lives. It is that tool which enhances one’s self-reliance. The learning and understanding of the methods and techniques of Mental Math reduces over dependence on calculators. This exploration will ultimately empower students who are lacking in this amazing part of Mathematics. Mental Math not only stimulates the thinking process but also helps in the better understanding of the number system. A mathematical method can easily be understood if it is explained in terms of an algorithm, followed by an example and then generalizing the result. In this paper, the researcher will focus on the extension of magic of 1089 and the further extension of the number.

**Keywords**

Mental Math, Algorithm, Extension.
ZONE BASED CLUSTER IN WSN
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Abstract
A Wireless sensor Network (WSN) is an accumulation of spatially circulated self-sufficient sensor nodes that can be utilized to screen, in addition to other things, natural conditions. WSN sensor hubs are obliged by their restricted vitality supply, correspondence range and nearby computational capacities. Information steering is a zone that can be streamlined to enable nodes to preserve vitality, improving the system's general lifetime. Under this methodology, the system is separated into various bunches. In this paper, another mixture calculation is proposed which joins both disseminated and incorporated calculations for choice of the Cluster head (CH).

Under this calculation, the CHs for initial two rounds are chosen by the base station (BS), utilizing a brought together calculation. For the third round onwards, the CHs are chosen by the past group heads utilizing a dispersed calculation. In many systems, sensor hubs have restricted vitality, so a Mobile Data Collector (MDC) is utilized to collect data, decreasing vitality necessities. The MDC goes about as an interface between the CHs and the BS. The transmission of information from the sensor hubs to the CH utilizes a proactive calculation and the transmission from the versatile hubs to the Base Station (BS) utilizes a responsive calculation. The BS isolates the system into outer and inner zones. The outer zone is additionally separated into divisions. Later they acquired outcomes understand that proposed work extensively achieves out execution contrasted with Scalable Energy Efficient Clustering Hierarchy (SEECH) as far as enhancing vitality and sensor organize.

Keywords
Wireless Sensor Networks (WSN), Clustering, Energy Efficiency, Cluster head.
SECURITY ISSUES IN WSN
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Abstract
Wireless Sensor Network has now been considered as an essential research topic. It has prolonged economic benefits. It can transform life and it can resolve many system challenges. Wireless Sensor Networks are widely dispersing self-configurable networks. WSN is based on the theory of embedding tiny sensing devices spread in a geographical range which are capable of sensing physical phenomenon such as weather forecast, target tracking, surveillance etc. Appearance of sensor networks in future as one of main technology has posed many challenges to researchers. Commonly, devices like WSN stands restricted particularly in terms of power, computation and communication. For increasing security vulnerabilities, WSN devices are frequently installed in manageable areas. Despite of being deployed in various applications, researchers have to face many critical technical issues. Energy constraint is the most critical issue in the hardware and software designs. Beside other related main issues security is also one of the main threats to WSNs Wireless Sensor Networks. These networks are built for remote surveillance and unauthorized variations in the sensed data may lead to incorrect information to the decision makers therefore WSNs must be secured from forging sensor information and to keep an attacker from delaying the delivery of sensor information. Provision of secured network is the basic requirement of any application is to make available a secured network because unsecured data provides false information to decision makers and consumers; therefore security is primary challenging issue along with energy conservation in WSN. This paper emphasis on the threats and security concern related to Wireless Sensor Networks.

Keywords
AVOIDING DATA BREACH IN CLOUD COMPUTING USING DES-192: AN EXTENDED KEY ENCRYPTION ALGORITHM
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Abstract
In the recent years, many IT companies have shifted their huge amount of data on cloud. A cloud-based system have conquered all the barriers of the data availability, but at the same time risks has been increased in data confidentiality, alteration, loss and illegal access; which is termed as Data Breach. This paper summarizes the security issues that are encountered as Data Breach in a system and the threats that a Cloud-based system faces. Finally we will provide a cryptography-based solution for controlling Data Breach in Cloud environment using DES-192.

Keywords
Cloud Computing; Data Breach; DES-192
Abstract
Sesame seeds and its lignans hold significant beneficial properties to combat the risk factor of cardiovascular diseases based on its lipid lowering functional property. This experimental study aimed at including sesame seeds as part of medical nutrition therapy in human dietary intervention trial. Pretest posttest control group design was used where 40 hyperlipidemic participations were randomly divided into two groups (experimental=20, control=20). Each participant consumed 40 grams of white sesame seeds daily as part of their routine diet for 4 weeks. No attempt was made to modify the dietary pattern or daily routine of the participants. Significant decrease in the lipid profile was observed at the end of the trial where 13.15 mg/dl in serum total cholesterol (TC) and 37.35 mg/dl triglycerides (TG) was observed. Similarly low-density lipoprotein cholesterol (LDL-C) was lowered by 12.75 mg/dl while high-density lipoprotein cholesterol levels (HDL-C) was increased by 6.9 mg/dl in the experimental group. Hence, the study concluded that Sesame Seeds has a positive effects on serum lipid profile of hyperlipidemic patients.

Keywords
Sesame Seeds, Hypercholesterolemia, Hyperlipidemia, Hypercholestelemic patients, Hyperlipidemic Patients, Lipid Profile, Cardiovascular Diseases, Cholesterol levels
IMAGINATION FOR CREATIVITY IN ROBOTS
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Abstract
The aim of this research is to make robots creative by encapsulating imagination in them. Imagination is mental manipulation of formerly experienced things by acquiring knowledge through more flexible approaches in which it can constantly learn new illustrations of data, transform themselves according to it and exhibit creative behavior. As imagery is created from the memory, mental manipulation of objects leads to constructiveness that is a powerful articulation of imagination. In the act of construction robot sees the ways to arrange certain objects or manipulates objects by reinstatement of preceding sensory excitations. Robots can perform cognitive processes including planning, putative reasoning, picturing objects in the past or the future by interacting with an imaginary world. It can be beneficial as it enhances the problem-solving skills of robot. Imagination can be helpful to visualize a particular situation. In order to integrate these abilities robot is required to be constructed with cognitive memory, sensory systems and action regulatory system.

Keywords
Imagination, Creativity, Cognition, Sensory Memory, Action regulation
IOT WILL BECOME PART OF COGNITIVE COMPUTING
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Abstract
The achievement of IoT technology through cognitive computing enables information collected by sensors to be collected by many internal and external resources. Deep and machine learning, neural networks, and other AI algorithms provide intelligent data to represent predictions of complete and sensitive fusion. The expansion of IoT in cognitive computing becomes motivated by a specific value that can easily be obtained from cognitive detailed data. This is especially important in the implementation of IoT care, where AI has to find a large number of unstructured indicators. Prognostic algorithms are needed to determine which indicator or abnormal data is really significant for each patient.
The direct involvement of IoT into the trend of cognitive computing is crucial to developing two of the most important data sounds traditionally opposed i.e. Machine automated action and human focused solutions. However, the consumption of cognitive computations from the IoT data provides the best efficiency, and in fact allows this automation to sharpen the decision making process.
The IoT expectation is expected due to the fact that the share creation process is progressing in real time. When the applications are combined with the automation of cognitive computation and the later is combined with the previous one, an uncommon truth is created in the prediction analysis to make the best decisions.

Keywords
Abstract
The dietary nutrients are of prime importance required to proceed various physiological and biochemical process in the body. Appropriate nutrition for a healthy lifestyle is a matter of concern now a days. For the purpose, exploration of novel foodstuffs to improve the health is highly needed. Keeping in view, the above mentioned facts, Pseudocereals such as Quinoa (Chenopodium quinoa) are convenient for this purpose. Quinoa belongs to Amaranthaceae family, is an ancient Pseudocereal that was cultivated in the Andes for the last 7,000 years. It has excellent characteristics, such as broad genetic variability, adaptability to adverse climate and soil conditions, low production cost and nutritional quality. Quinoa is gluten free and protein rich food as well as having all 9 essential amino acids which are extremely close to human nutrition standards established by the FAO. It is also high in fiber, magnesium, B-vitamins, iron, potassium, calcium, phosphorus, vitamin E and various beneficial antioxidants. Owing to good nutritional profile, quinoa helps to fight against cancer, hypertension, diabetes, cardiovascular diseases and inflammation. It also improves the metabolism, prevents gallstones and helps to reduce the intake of food. Presently, quinoa is in a process of expansion because it has great potential to improve the living conditions of people in the modern world.

Keywords
Pseudocereals; Quinoa; Essential Amino Acids; High Fiber
Abstract

Anthropomorphisation is a process of fundamental interpretation where not only people perceive robots as alive, but they also imagine them as alive. A strong ontological assumption, humanlike machines actually become human. Human interact with each other by imitating the psychological processes of another human; robots interacting with humans can mimic their cognitive processes by paying attention in environment. Social interaction of robots with humans allow robots to hold the social nature of human creativity and the ability to make meanings. Robots attribute meanings to things they deal with through symbolic interactionism. Robots interpret things by constructing their meanings. In symbolic interactionism, sometimes resemblance of things leave room that is filled by robots, what it samples from surrounding information by create imagination. Imagination or creativity of robots originates illusion that is the technique of materializing emptiness, nothing, the impossible life. Creativity of robots may allow robots to see illusions anywhere and anytime. Teaching robots to see illusions may help to get more smart environment in future.

Keywords

Anthropomorphisation, Ontological assumption, Symbolic interactionism, Illusion, Materializing Emptiness
GREEN SYNTHESIS OF COPPER OXIDE NANOPARTICLES USING PLANT EXTRACT OF *JASMINIUM SAMBAC*: CHARACTERIZATION AND ASSESSMENTS OF ITS PHOTOCATALYTIC ACTIVITY

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Abstract

A rapid increase in textile dyes led to increases in water toxicity. The untreated wastewater from textile industries contained a number of synthetic dyes that are not only life-threatening for human beings but also for aquatic life. To get rid of this problem, a biogenic process for the synthesis of nanomaterials using plants is considered among the best method because it is economical and environment-friendly. The nano-sized particles provide a large surface to volume ratio which show unique physiochemical property like photocatalytic activity. The aim of this study was to focus on the synthesis of copper oxide nanoparticles by using *Jasminium sambac* leaves extract under different conditions of pH, temperature, time, and concentration of Copper Sulphate. Characterization of synthesized copper oxide nanoparticles was done by UV-Vis spectrophotometer, SEM, XRD, FTIR and EDX analysis. The UV-Visible absorption at 243 nm confirmed the formation of CuONPs. FTIR analysis showed a peak at 590cm⁻¹ that confirmed the reduction of Cu ion into CuONPs and a broad peak at 3243 cm⁻¹ confirmed the presence of polyphenolic group which was responsible for reduction and capping of Cu ion to synthesized zero-valent CuONPs. EDX analysis also confirmed the presence of elements with a mass percentage of 75.94 and 24.06% Cu and O, respectively. SEM and XRD analysis confirmed the mono-dispersive structure of CuONPs with an average size of 13.4 nm. After that, the synthesized copper oxide nanoparticles were utilized for photocatalytic degradation of Methylene Blue Dye. Up to 97% degradation of MB dye was obtained at 210 min of exposure time under solar light irradiation.

Keywords
Jasminium Sambac, Cupper Oxide Nanoparticles, Photocatalytic Degradation
Abstract
IoT have become very common. Many things in today’s world have become automated It requires information protection, security, strength against assaults and self-support. Such highlights are made conceivable by blockchain. Blockchain trust in appropriated condition. Troublesome advances, for example, enormous information and distributed computing have been utilized by IoT to defeat its confinements since its origination, and we figure blockchain will be one of the following ones. In this paper we have discussed basics of blockchain, message time stamping, mining and security issues and challenges related to block chain for IoT.

Keywords
IOT, Blockchain, Message Timestamping, Mining.

139

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DETECTION OF GRAM NEGATIVE BACTERIA ON THE DOOR HANDLES OF KINNAIRD COLLEGE FOR WOMEN, LAHORE
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Abstract
Fomites are the objects that play significant role in the conduction of pathogenic microorganism from one person to another. Household object such as door handles act as a vehicle of transmitting pathogenic microorganism that cause infections. There is no proper practice of cleaning or disinfecting door handles and it is consider as a high risk surface that contain load of microbes. Door handles have traffic users that contact from person to person. The study proposed to determine the load of microorganism on the door handles.

The research aimed was to identify the load of microorganism on the door handles of Kinnaird Collage for Women, Lahore and further specifically detection of gram negative bacteria on the door handles through biochemical test.

Forty swab samples of door handles were collected within the Kinnaird College and tested for the microbial contamination present on door handles. Various type of microorganism was grown on the selected media which determine the heavy microbial load on door handles. Out of 40 swabs 23 samples contain gram negative bacteria determine by using media, Eosin Methyl Blue. These 23 samples were from cafe, washrooms, day care and Biotechnology Laboratory.

High percentage of Klebsiella pneumoniae, Escherichai coli, Enterococcus cloacae species were found on the door handles while Acetobacters, Shigella, Salmonella were found at low percentage.
Abstract
A wireless sensor network (WSN) is a network formed by a large number of sensor nodes where each node is equipped with a sensor to detect physical phenomena such as light, heat, pressure, etc. The transmission is done by the deployment of nodes. Clustering is basically an accumulation of nodes. It is critical to build the life expectancy of sensors and furthermore to appropriate the control over WSN. Therefore, the main problem which has been discussed in this paper is that energy can be utilized only to some extent in one of the hierarchy routing protocol. Furthermore, lower the battery control prompts decline in lifetime for a sensor. Huge amount of data is managed by cluster heads which causes poor life time for cluster heads. In result GA based adaptive clustering protocols have been discussed named as VGDRA (Virtual Grid Dynamic Routes Adjustment) which improves the throughput of WSN. Moreover, in the end we have proposed a solution named as Hybrid VGDRA approach. This solution uses data accumulation and learning based methods which will be discussed in proposed solution section.

Keywords
PREPARATION AND CHARACTERIZATION OF BIOPOLYMER-CLAY HYBRID NANOCOMPOSITES
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Abstract
Hybrid nanocomposites of biopolymer and clay matrices have attracted special attention due to their synergistic properties and potential applications in pharmaceutics, optics, fuel and solar cells, ionics and industry [1-3]. A simple and eco-friendly intercalation method was adopted to prepare novel biopolymers based nanocomposite by using neutral guar gum. All synthesized compounds are characterized by FTIR, and thermal methods of analysis.

Keywords
Hybrid, Nanocomposites, Biopolymer, Synergistic, Gur Gum.
CAFE AUTOMATION SYSTEM
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Abstract
Café Automation System is an android based mobile application enables the students to order food online without waiting in the queues at cafeteria. The aim is to develop an efficient, cost effective and precise ordering system. To implement a system which will certainly satisfy customer service. To build a system that can maintain huge quantities of orders in less time. To assess its productivity and usefulness in terms of privacy, user-friendliness, reliability and quality. To improve the communication between the customer and the Café administration and minimize the time of ordering. Students can order food online using the android application by simply selecting the food they want. The student can easily and skillfully log in and choose the food he desires from the regular menu and then just verify the order. After choosing the food, the student will be shown the details of the order and the total bill that would be automatically deducted from his wallet. This application computerizes the operation of the café in order to properly share and store all information pertaining to the orders and admin activity of the students in the database of the café. Most importantly, all information about the café is structured and saved for admin viewing and archiving in the system database. There is no more abundance of papers and long hours of punching numbers. All data is automatically collected and processed allowing management to focus on analyzing the data rather than calculating it.

Keywords
Café, Automation, Order, Food, Database.
COMPARATIVE STUDY OF SPIN-GLASS-LIKE FREEZING AND ENHANCED MAGNETIZATION IN NANO PARTICLES
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Abstract
On entering the nanometer scale regime the magnetic behavior of materials shows substantial differences with respect to the bulk state, exhibiting new phenomenon and opening challenges in both fundamental physics and in technological applications. The magnetic properties of ultra small Nano particles that are synthesized by sol-gel technique have been investigated by DC magnetization measurements as a function of temperature and magnetic field. Disorder among surface spins is the dominant factor in the magnetic response of Magnetic Nano particle systems. The main features of the magnetic behavior are blocking of non-interacting particle moments (zero-field-cooled-magnetization T (max) ~ 40 K), Magnetic Relaxation and hysteretic loop. Aging effect is a further unique fingerprint of a SPIN-GLASS-LIKE freezing on the surface of isolated magnetic nanoparticles. Moreover, super para magnetism, surface anisotropy and non-collinear spin structure are among the most relevant effects associated with Suze reduction. One of the most controversial issues in the magnetic behavior of Nano particles is the observed variation of saturation magnetization with respect to the bulk materials. The magnetically disordered surface layer is responsible for the low value of saturation magnetization of the Nano particles. On the other hand, a steep rise in saturation magnetization at low temperature has been reported for ferromagnetic Nano particles. This phenomenon has been generally explained by the freezing of surface canted spins and some investigations into the dependence on particle size have been carried out. Magnetic Nano particles of various shapes and sizes have received considerable interest in recent years owing to several challenges in the fundamental physics that they provide. So, this is a comparative study of spin-glass-like freezing and enhanced magnetization in Nano particles.
ENHANCEMENT OF ZEA MAYS L. SEEDLING GERMINATION UNDER THE EFFECT OF ZINC OXIDE NANO-FERTILIZERS

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Abstract
Use of Nanotechnology in agriculture has gained much interest in recent years. Zea mays L. (maize) is considered as an important cereal cash crop after wheat and rice globally and zinc deficiency in cereal crops is very common. To overcome this problem zinc Nano fertilizers can be used which are environment friendly, economical, easy and efficient to use. In present research work, Zinc oxide nanoparticles have been utilized to determine their effect on Zea mays seed germination. Results indicated that ZnO NPs improved seed germination percentage (92%), seedling vigor (3584.72±382.74) and dry seedling weight (0.23±0g) as compared to control (78%, 2113 and 0.20g respectively). Zinc is vital micronutrient for many biochemical reactions in plant. Moreover in present investigation biochemical tests i.e. sugar test, protein test, proline test and chlorophyll test of leaves of maize seedlings treated with different ZnONPs concentrations were performed. It was seen that ZnO NPs enhanced sugar content (450±0µg), protein content (17± 0.2µg) and chlorophyll content (682.96±157.3mg) per gram of plant material as compared to control (180µg, 10µg and 200mg/g of plant material). It is concluded that Zinc oxide nanoparticles can be used as Nano fertilizers to enhance plant growth and improve its metabolic processes for Zea mays L. on commercial level.

Keywords
Zea Mays L., Zinc Oxide Nanoparticles, Seed Germination, Seedlings, Corn
AUTOMATIC ELECTRONIC LOCK USING
MICROCONTROLLER AT89s51
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Abstract
Security is a major concern in our today’s life. Everyone desires to be secured as much as possible. An access control for doors practices a dynamic link in security chain. In this project, a circuit is designed that gives the solution to avoid access of unauthorized person to any restricted area. For this purpose, the manual opening of door is replaced by automatic door access process. The microcontroller based Door lock is an access control system that permits only official persons to access a restricted area. It could be used to automate the door locking process and to solve the problem of misplaced key. Further it allows the user to unlock a device using a password. It is cheap, portable, light weight and reliable.
The system consists of AT89s51 microcontroller that unlocks the door when correct password is entered. For programming of microcontroller, two basic tools are required. One is the software for embedding the code in microcontroller and second is the simulator called PROTEUS. The other components are LCD (liquid crystal display), keypad, relays, quartz, buzzer crystal, capacitors and resistors. LCD displays “Enter the password”, and afterwards keypad is used to enter the password. Once we enter the password that matches the password stored in the memory, the relay gets on and so door gets open. If we enter incorrect password, “wrong password” is displayed on LCD and the buzzer rings. This project uses regulated 5V power supply.
This poster present circuit diagrams, block diagrams, a physical description and relevant experimental results of the proposed system.
Abstract
In Medical field most of professionals are adopting Internet of Things (IoT)-based wearable technologies to modernize the diagnosis and treatment procedures. Recent years have seen billions of sensors, devices, and vehicles being connected to the Internet. With the advancement in medical field is posing grave confidentiality threats and security invasion of data transferring and the logging of data transactions. These security and privacy threats causes severe consequences which can even endanger the patient’s life. The focus of this paper is on the securely sharing of ever growing data by incorporating Blockchain technology in healthcare sector specially in Wireless Body Area Network (WBAN). There are some challenges that incorporation of Blockchain technology with WBAN like Interoperability, Data Management, Anonymity, and Privacy, Quality of Service (QoS), Heterogeneous Devices and Traffic and Delay which will also be discussed in this paper.

Keywords
Internet of Things (IoT), Blockchain technology, Wireless Body Area Network (WBAN), Healthcare.
PERFORMANCE ANALYSIS OF LEACH, SEP AND TSEP IN HWSN
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Abstract
Clustering and chaining are the well-known WSN’s routing method. To check the efficiency of different clustering scheme against modeled constraints, we use some of the cluster-based routing protocols. In this paper we are talking about Low Energy Adaptive Clustering Hierarchy (LEACH), Stable Election Protocol (SEP) and Threshold Sensitive Stable Election protocol (TSEP). The most traditional algorithm is LEACH. Micro sensor nodes in wireless sensor networks (WSN) have limited energy, communication stops when these nodes lose their energy completely. One of the energy-efficient communication protocols for this network is LEACH that works on cluster-based homogeneous WSNs. Though LEACH is energy-efficient but it does not take security into account. Because WSNs are usually deployed in remote and hostile areas, security becomes a concern in designing a protocol. WSN have important applications in remote environmental monitoring, target tracking and transportation security, as there are limited energy resources of sensor nodes the optimization of energy consumption is very crucial. Different approaches are applied to reduce energy consumption allowing enhancing network life-time of the network. The LEACH protocol used a CH selection by considering the remaining energy of sensor node in the probability to become CH. Whereas, Threshold Sensitive Stable Election Protocol (TSEP) is reactive protocol using three levels of heterogeneity. Reactive networks, as opposed to proactive networks, respond immediately to changes in relevant parameters of interest. TSEP utilizes local energy balancing to achieve global energy balancing. TSEP combines the K-regular method with routing based on geographical location information, and is a distributed and localized energy balancing strategy. The performance of TSEP is simulated and analyzed. The outcomes shows that TSEP significantly prolongs the lifetime of energy-critical nodes and the network compared with existing protocols.

Keywords
Clustering, Micro sensor nodes, LEACH, T-SEP, WSN.
AN ENERGY EFFICIENT APPROACH TOWARDS IMIDAZOLE
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Abstract
The energy efficient synthetic protocol and safe solvent approach is an important focus of green synthetic chemistry [1]. Water is a readily available and non-flammable universal solvent and microwave radiations are used as energy efficient source [2]. The conjoining of microwave as the driving force and water as the reaction medium resulted a highly sustainable and energy efficient approach for the synthesis of imidazoles.

Keywords
Energy efficiency, water, microwave, Imidazole.
SOLVENT FREE PROTOCOLS FOR INDOLE AMIDES SYNTHESIS
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Abstract
Indole derivatives are delineated as significant components in biological exercises like antimicrobial, anticancerinogen, pain relieving, insecticidal and herbicidal activities. Solvent free synthesis is attempted to afford Indole amides by reducing the chemicals consumption and reducing VOCs to environment. Synthesized items are affirmed basically by help of Fourier Transformation infrared spectroscopy (FTIR).
Using Vessel’s Location Map and Frangi Enhancement Filter An Efficient Retinal Vessel Segmentation

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Abstract

In the area of computer aid analysis, the automatic scrutiny of retina image plays a vital role in the study of ophthalmic abnormalities. Retinal vessels can be affected with a different disease like stroke, coronary heart diseases, and diabetic retinopathy. Retina vasculature is a great source of analysis of such diseases, as it is more sensitive, transparent and directly related to one of the prime senses of a human. A lot of research has been done on retinal vessel segmentation using openly available structured analysis of the retina (STARE), digital retinal images for vessel extraction (DRIVE) datasets. In this research, a method has been proposed for automatic fundus vessels segmentation with less time complexity and competing results as compared to recent techniques.

Keywords

Clahe Morphological Filters, Vessel Segmentation, DIP, Color Fundus Images, Retinal Image Analysis
THE GENETIC LANDSCAPE OF TWO FAMILIES AFFECTED WITH PRIMARY MICROCEPHALY

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Abstract
Primary Microcephaly is a rare autosomal recessive hereditary neurodevelopmental disorder marked by reduced head circumference of at least -2 SD below the mean age and gender. In MCPH, the skull has the ability to grow normally but the brain development is impaired owing to any of the 24 genes identified so far. The impaired brain development is manifested by non-progressive mental retardation ranging from mild to severe. The incidence of MCPH is 2-2.5% in regions like Asia and Arab Peninsula where consanguinity is a common social practice. Out of the twenty four loci identified so far, 8 have been reported from Pakistan. In the current study, two large multigenerational microcephalic families were sampled from the outskirts of Lahore, Pakistan. All the relevant clinical and pedigree information was collected to confirm the mode of inheritance and the clinical diagnosis. Venous blood samples were drawn from all available family members for genomic DNA extraction. DNA from both the families was then subjected to exclusion from the eight most common genetic loci (MCPH1-MCPH8) using at least five STR markers for each locus. The PCR products were visualized using 8% polyacrylamide gel electrophoresis. The haplotype analysis for each locus was done to confirm linkage; however, none of the families were found linked to any of the eight loci being screened for. This strictly points either towards these families linking to any of the other sixteen loci identified or having an altogether a new MCPH locus. Genome Wide Association Study (GWAS) would be a good future prospect for the elucidation of the underlying genetic cause of the disorder under investigation only after which, clinicians and geneticists would be able to offer genetic counseling and carrier screening to the families recruited for the study.

Keywords
Mcp, Neurodevelopmental Disorder, Consanguinity, Exclusion Mapping, Genetic Counseling
ASSESSMENT OF THYROTROPIN WITH OVARIAN RESERVE MARKERS IN ASSOCIATION WITH BODY MASS INDEX AMONG SECONDARY INFERTILE WOMEN

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Abstract

Infertility is a medical condition when a couple fails to conceive after having regular unprotected intercourse without the use of any contraceptive, it can be primary with no previous conception or secondary with one or more previous conceptions. A number of anomalies in the reproductive track govern the state of infertility in female of reproductive age. The aim of the study was to assess the BMI based combinatorial effect of gonadotropins with thyrotropin and ovarian reserve markers in secondary infertile women. The study was conducted on 100 secondary infertile women according to BMI groups {Normal 18-23.9 kg/m² (N=35) and Overweight 24-27 kg/m² (N=65)}, attending Lahore Institute of Fertility and Endocrinology. Hormonal levels of TSH, LH, FSH and AMH were measured by using Roche electrochemiluminescence immunoassay (ECLIA) and AFC was recorded by transvaginal ultrasonography. The results were statistically analyzed by Spearman correlation test using XLSTAT, considered significant at p-value <0.05. A strong significant positive correlation was found in the TSH, age and BMI, however, these factors were found to be negatively correlated with AMH and AFC. Gonadotropins level was increased with increase in TSH levels among participants with normal BMI but decreased with increase in TSH values among overweight population. TSH was found to be one of the most important factors of infertility, it must be monitored in relation with other parameters (AMH, AFC, FSH, and LH) in order to spot instigation point, and moreover, weight should be assessed regularly with age to minimize the infertility issues.

Keywords

Secondary Infertility, Thyroid Hormones, Body Mass Index, Ovarian Reserve Markers.
Abstract

*Ornithobacterium rhinotracheale* (ORT) belongs to rRNA super family V including many other pathogenic bacteria. ORT infections attack deadly on the birds causing respiratory infections and the conditions worsen with *E. coli* associated diseases. ORT infections have been observed in different countries like India, China, Afghanistan, South Africa, Brazil, Pakistan, Thailand and Turkey causing huge economic losses. Isolation of ORT is very difficult as it does not have a selective growth media which is the major hinderance in diagnosis of ORT infections. We have isolated bacterial samples from the anterior portion of *Gallus gallus domesticus* trachea. The identification of ORT was done by biochemical analysis and isolated colonies were characterized through PCR analysis. Biochemical tests done for identification included Gram’s staining, oxidase test, sugar fermentation tests, catalase test, growth on MacConkey agar and urease test. Grey-white, nonmotile colonies obtained on LB Blood agar indicated the presence of ORT colonies. Gram staining of these colonies resulted in reddish pink color pleomorphic rod shaped gram negative bacteria. These colonies gave negative catalase test. There was no growth on MacConkey Agar. The isolated colonies gave negative urease test; positive oxidase test and positive fermentation test all indicating ORT. For molecular characterization, genomic DNA was extracted and PCR analysis was done using primers specific for 16S rRNA coding gene. Out of 13 bacterial colonies isolated by biochemical analysis, 9 were characterized as ORT after PCR analysis.

Keywords

*Ornithobacterium rhinotracheale*, Biochemical Analysis, 16S Rrna Gene, Molecular Characterization.
IN SILICO SCREENING AND DE NOVO STRUCTURE PREDICTION OF VNCS AS A NEW DRUG TARGET IN STREPTOCOCCUS PNEUMONIA TYPE 2

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Abstract
One of the most prevalent acute respiratory diseases, pneumonia, has been associated with high morbidity and mortality rates that ended the lives of ~1.3 million people in 2010 alone. *Streptococcus pneumoniae* is the major etiological agent of pneumonia that colonizes the nasopharynx. Initially the colonization is asymptomatic, which later leads to potentially life-threatening infections, including sepsis and meningitis. *S. pneumoniae* adaptation to external stimuli is often mediated by systems known as two-component systems (TCS). A TCS is composed of two proteins: a membrane-associated sensor histidine kinase (HK) and a cytoplasmic cognate response regulator (RR). Upon receipt of a specific external stimulus the kinase domain of the HK sensor protein, which are found in dimeric form, is activated to auto phosphorylate a conserved histidine residue. This phosphate group is then transferred by the HK to a conserved aspartate residue in its cognate RR. In turn, the RR undergoes a conformational change allowing it to regulate gene expression or protein function. Bacterial HKs are the main signal transduction pathways, regulating various processes including virulence, secretion systems and antibiotic resistance.

The 3D structure of the *S. pneumoniae* HK has not been resolved yet. Owing to its crucial role in the pathogenicity and drug resistibility of the bacteria, we have investigated the structural insights of the kinase domain (catalytic domain (CA)) of the HK and later proposed few potent HK inhibitors. Initially the CA domain was built through standalone packages such as MOE (2018) and online server, Swiss-Model, and dually evaluated through ERAT, PROCHECK and the built-in structure verification tool in MOE. After structural verification, the selected model was optimized by following the previously used protocols. Extensive search was made to collect previously reported HK-inhibitors and converted into an in-house database using MOE. The ligands in this database were docked onto the CA domain of the HK and results were analyzed. These selected ligands could be potent HK inhibitors and pave a way to the treatment of drug resistant *S. pneumoniae* infections.

Keywords
Vnsc: Histidine Kinase, Rr: Response Regulator, Moe: Molecular Operating Environment
EFFECT OF ANTI-TUBERCULOSIS DRUGS ON HUMAN LIVER
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Abstract
Mycobacterium tuberculosis causes lung pulmonary tuberculosis. Commonly four drugs are used for anti-TB therapy. These drugs cause liver damage by destruction of liver cells and releases Alkaline phosphatase [ALP], Glutamic Pyruvate Transaminase [SGPT] and Glutamic Oxaloacetic Transaminase [SGOT] in serum which detects toxicity or malfunctioning of human liver. This study was designed to evaluate serum levels of liver enzymes (SGOT, SGPT and ALP) in 100 TB patients. Fifty out of 100 patients were taken at zero day of their treatment and fifty patients were taken after second month of treatment. The mean ± SD of age, BMI, physical activity level (PAL) of total patients, at PTB-0 and PTB-2 were 40.46±12.91 and 38.80±13.34 years, 21.39±2.77 and 18.64±2.41 kg/m², 1.41±0.131 and 1.39±0.12 respectively. The mean ± SD serum SGOT, SGPT and ALP levels of total patients at PTB-0 and PTB-2 were 25.24±8.03 and 55.60±3.40 U/L, 19.66±5.52 and 36.62±3.85 U/L, 127.92±16.88 and 252.90±37.73 U/L respectively. No association of SGOT (p=0.545, p= 0.249), SGPT (p=0.455, p= 0.704) and ALP (p=0.71, p= 0.304) was found with age at both stages. A significant difference in mean± SD of serum SGOT, SGPT and ALP of TB patients was found between PTB-0 and PTB-2 (p=0.00), (p=0.00) and (p=0.040) respectively. The study concluded that anti-TB drugs had no severe effect on liver of Pakistani TB patients as serum levels of SGPT, SGOT and ALP increases to such a limit that can be easily recovered after anti-TB treatment.

Keywords
Pulmonary Tuberculosis (PtB), Anti-Tuberculosis Treatment, Drugs, Liver Damage, Liver Enzymes.
Abstract
Hempseed (*Cannabis sativa* L) is emerging as one of the key sources of phytochemicals in the functional food arena and known for its nutritional, functional and medicinal qualities. In addition to being one of the richest sources of α-linolenic acid oil (omega-3) and linoleic acid (omega-6), hempseed is a good source of high-quality biological value protein providing all essential amino acids. Purposely, the effectiveness of diets containing hempseed for weight management in overweight young female adults were assessed. Study was carried out with a sample size of 30 female volunteers between the age of 20 and 24 years with a BMI ≥24.9 as experimental group excluding the control one. A Hemp bar was developed and standardized containing shelled hempseeds powder with roasted gram, puff rice, milk and sugar. That developed bar was to be taken daily in replacement of their routine college afternoon snack for a period of 8 weeks. Baseline and 8 week weight measures were obtained while follow up was carried out at regular intervals of two weeks where weight was recorded and Food Logbook was collected and exchanged with a new one. Average weight loss after 8 weeks was -2.42% (P=0.001) and a mean reduction in BMI of 1.27 kg/m$^2$ (P=0.000) was recorded post intervention while no significant difference was seen in dietary data pre-and post-intervention (P=0.370). Thus, it may be concluded that inclusion of hempseed-based bar as part of dietary intake may help lose weight without specific dietary modifications.

Keywords
Hempseed, Weight Management, BMI, Meal Replacement Bar
ANTHROPOGENIC SOURCES OF CARBON DIOXIDE AND IT’S EFFECT ON EARTH’S TEMPERATURE

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Abstract
Green House gases have long been contributing to global warming, ultimately paving way for climate change. Carbon dioxide (CO2) is the primary greenhouse gas and its emissions have a main role in the mounted temperature of the Earth. Although there are certain natural sources of carbon dioxide like volcanic eruption and forest fires but the anthropogenic sources of CO2 contribute lion’s share in its alarmingly increased concentration. The increased use of fossil fuels burning - mainly coal, natural gas and oil – could be regarded as major culprit behind atmospheric CO2’ elevated level. The concentration of CO2 was nearly 270 ppm in pre-industrial era and today it is more than 410 ppm. A significant fraction of Carbon dioxide emissions will stay in the atmosphere over many millennia leading to severe environmental impacts like glacier melting, sea level rise, floods, droughts, cyclones and heat waves. The global warming affects the social and the economic conditions of developed as well as developing countries. So, there is an immediate need to overcome the rising level of CO2 concentration to minimize the global impacts of extreme events. Hence, this study was conducted in order to investigate the major sources of carbon dioxide in order to provide the global scientific community and policy makers with the much required scientific data to curb the CO2 emissions. This is a novel study since it not only identifies the CO2 sources but also tries to present a detailed – qualitative and quantitative - account of the associated impacts experienced – or expected to experience in future – by different countries.

Keywords
Global Warming, Green House Gases, Carbon Dioxide Emissions, Climate Change, Sources Of Ghgs, Fossil Fuels
EVALUATION OF GENEXPERT IN DIAGNOSIS OF SMEAR NEGATIVE TUBERCULOSIS PATIENTS

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Abstract
Tuberculosis (TB) is a fatal infectious disease which infects the lungs and can spread to other parts of the body including spine and brain and it is caused by acid fast bacilli *Mycobacterium tuberculosis*. Inhalation is the primary route of infection. There are two forms; latent and active. In case of latent TB, tubercle bacilli are inactive because immune system plays defensive role and protects the body from disease. These bacilli can become active at any time particularly in case of immunocompromised patients; those having HIV, and other chronic diseases. Sputum microscopy is used as a routine diagnostic test to check the presence of *M. tuberculosis* in the person’s sample and showed the sensitivity of 20-80%. LJ culture is considered gold standard test for diagnosing TB but long incubation period of *M. tuberculosis* is a major drawback. In comparison to these test, GeneXpert is more rapid (provides results in almost two hours), sensitive and specific and can identify the rifampicin resistance as well. This study was carried out at Pakistan Health Research Council, Mayo Hospital Lahore. This study aimed to find the value of GeneXpert in diagnosing TB in sputum smear negative patients and find the resistance of *M. tuberculosis* against Rifampicin. A total of 150 patients that were negative with smear microscopy were included in this study. Analysis of these samples with gene expert showed significantly higher value as compared to microscopy. Thus, results showed that GeneXpert has more sensitivity over microscopy in diagnosing tuberculosis and is an important tool to detect rifampicin resistance simultaneously.

Keywords
Tuberculosis, Smear Negatives, Microscopy, Genexpert, Rifampicin Resistance
IMPACT OF NEW MEDIA ON CHILDREN’S CREATIVITY

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Abstract
The study was designed to investigate the impact of new media on children’s creativity. The objectives of the study were to investigate the effect of new media on children’s imagination, abilities and skills. New media is a term of twenty first century that focuses on different branches of media. In this era of technology people must know the impact of new media on the level of child’s creativity. The study indicated the impact of media upon children’s creativity in historical progression. Media enhance the imagination, skills and creativity of children, however in certain circumstances it can also be demolish. Children destroy their abilities by the wrong use of new media. Therefore educators and parents should be focus upon the right use of medium. The findings of the study showed some interesting contribution for social life, but the further research is needed upon the well designed and age appropriate media’s impact upon children.

Keywords
Children’s Creativity, New Media Learning, Professional Activities, Revolutionary Skills
DEVELOPMENT OF IRON ENRICHED RICE FLOUR PASTA TO ADDRESS NUTRITIONAL ANEMIA IN EXPERIMENTAL SUBJECT
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Abstract
Objective of this study is to address nutritional anemia and elucidate the bio-efficacy of iron salt fortificant in rice pasta through experimental model. In Pakistan population are facing micronutrient deficiencies. Although, anemia is cause of iron deficiency and major public health problem. In addition to this, iron deficiency anemia are most prevalent among children, younger girls and pregnant-lactating women. According to World Health Organization in Pakistan it has been estimated that 60 % pre-scholar, 30 to 40% women are suffering of iron deficiency. According to situation, NaFeEDTA iron salt fortified rice pasta were developed with 10,15,20,25,30 ppm concentration whilst commercially available fortified cereal were purchased for compared the effectiveness of developed product. For the purpose, carbon tetrachloride (1.9 ml/kg of body weight) were given intraperitoneal for induced anemia in mice two time per week whilst this process were continued for three successive week. For efficacy trial, 40 Sprague Dawley mice were divided into eight group (5 in each group). Purposely, Group G₀ and group G₇ served as control and anemic control which fed on unfortified diet and other five group treated with 10, 15, 20, 25, 30 ppm fortified NaFeEDTA rice pasta whilst group G₆ treated with commercially available fortified cereal. In this context, water and feed intake were reported on daily basis whilst weight on weekly basis. At 29 day blood sample were collected with help of cardiac puncture for biochemical analysis whilst kidney and liver sample were collected for evaluate iron content. However, impact of treatment on hemoglobin, serum iron, serum ferritin, serum total iron binding capacity (TIBC), hematocrit, Mean corpuscular volume, Mean corpuscular hemoglobin, iron content of liver and kidney were reported. It has been observed that treatment of group G₅ (fortified with 30 ppm of NaFeEDTA salt) has been significantly improved (p≤0.05) Hemoglobin level (14.22±.242), Serum iron level(258.51±4.40), Serum ferritin level (33.60±.57), TIBC (519.03±8.85),hematocrit (28.7674±.49060), MCV(39.98±.681), MCH (23.02±.39), Iron content of kidney (106.35±1.813) and Iron content of liver (15.4308±.26316) then anemic control Hemoglobin (8.21±.14), Serum iron (114.22±1.9), Serum ferritin (21.00±.358), TIBC (705.40±12.029), Hematocrit (16.88±.287), MCV (28.66±.488), MCH (16.24 ±.277), iron content of kidney (57.93 ±.98) and iron content of liver (7.85±.133). Although, rice flour pasta fortified with 30 ppm of NaFeEDTA salt were significantly improved biochemical level (p≤0.05) as compared to other treatments and commercially fortified cereal. It is concluded that rice pasta fortified with 30 ppm NaFeEDTA has been significantly addressed nutritional anemia.

Keyword
Anemia, Fortification, Nafeedta Salt, Nutritional Anemia
Abstract
Meat is considered as a central element of a healthy and nutritious diet in being a source of high-value protein. Over the years, there has been an increased trend in consumption of convenience foods. Despite, quality related issues are a major concern to food safety experts globally. Apart from diseased meat and microorganisms, certain studies have backed certain processing/cooking techniques that can be used in conjunction with the challenge of heavy metals and Aflatoxin. In this context, WHO has interpreted that even low scores of heavy metals, such as cadmium and lead, can cause disorders as malignant neoplastic disease and other upsets. On the other hand, aflatoxins are considered to be of a serious danger to human health due to their hazardous effects such as, mutagenicity, hepatotoxicity, teratogenicity and carcinogenicity. The present review is an attempt to summarize all the processing/cooking methods that can be adopted to ensure a greater level of meat safety.

Keywords
Meat, Cooking, Heavy Metals, Aflatoxins, Food Safety
EXPLORING TECHNO-FUNCTIONAL ATTRIBUTES AND HYPO-GLYCEMIC
POTENTIAL OF BASIL SEED GUM USING RODENT
EXPERIMENTAL MODEL
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Abstract
Basil is an aromatic herb that is used extensively to add distinctive aroma and flavor to food. Ocimum basilicum L. is an important medicinal and culinary herb that contains several highly antioxidants compounds, antibacterial potential, and antimicrobial potential, antifungal potential and antiviral activity. Traditionally, basil has been used as a medicinal plant in the treatment of headaches, coughs, diarrhea, constipation, warts, worms, and kidney malfunction. Basil seed gum is a pectineus material released from the outer pericarp or outer epidermis of seed. The mucilaginous layer of the swollen seeds is a pectinous matrix, consisting of considerable amounts of unesterified galacturonic acid with a large capacity of hydration. Basil seed gum reduces the surface tension, increase the emulsifying quality, and improve the foam capacity and a great fat replacer. Basil seed gum has been used as a fat replacer in yogurt, mayonnaise, pistachio butter and ice-cream. Basil seed gum different applications such as disintegrate, pharmaceutical excipient, suspending agent, anti-diabetic, Phytoxic effect of on germination and seedling growth of plants, cryo-protection agent, biodegradable edible film. Basil seed gum has been used a novel stabilizer for structure formation and reduction of ice recrystallization in ice cream. Basil seed gum has also been used in sponge cake as substituted mucilage for fat source. Basil seed gum has also been used in bread to check physicochemical, sensorial, and rheological parameters.

Keywords
Basil Seed Gum, Medicinal Plant, Fat Replacer, Anti-Diabetic, Novel Stabilizer
ESTIMATION OF SELECTED HEAVY METALS IN DIFFERENT YOGURT SAMPLES COLLECTED FROM LAHORE
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Abstract
Dairy products are one of the major constituents of our routine dietary plan. The quality of fermented dairy products is a subject of high interest as the processing conditions as well as process handling could contaminate these products and thus may perhaps become a reason of different human diseases. The household consumption of yogurt is common in Pakistan. Therefore, this current research work is mainly designed to estimate and compare the heavy metal concentrations in different yogurt samples. In this regard, twenty non-branded and five branded yogurt samples were collected from Lahore city. After sample preparation, the concentrations of five selected heavy metals (Cu, Zn, Ni, Mn and Cd) were determined by using atomic absorption spectrophotometer. The results have shown that in most of the samples; Mn, Zn, Ni and Cu were present in higher concentrations than that of their standard permissible limits. However, Cd was identified little higher than standard limit in only two samples. Moreover, the non-branded samples have higher count of these metals as compared to branded one. The overall decreasing order of heavy metal concentrations was: Zn > Cu > Ni > Mn > Cd. Furthermore, descriptive statistical calculations helped in identifying the significant relation among these detected heavy metals.

Keywords
Yogurt, Atomic Absorption Spectroscopy, Heavy Metals, Statistical Analysis
Abstract
The objectives of this study were to prepare biosorbents from vegetable waste such as turnip and radish peels, cauliflower and spinach waste, to analyze effluent from leather and pharmaceutical industry and determine biosorption efficiency of the vegetable waste for removal of heavy metals. Effluent samples from a pharmaceutical industry in Sheikhupura and a leather industry in Kasur were analyzed for pH, conductivity, turbidity, total dissolved solids (TDS), dissolved oxygen, chemical oxygen demand (COD), biological oxygen demand (BOD) and nitrates. For preparation of biosorbents, turnip (1499g) and radish (849g) peels were sun and oven dried to give 127g and 60g powder. Sieving resulted in 69g of turnip powder (250 μm). It was 42g for radish. Spinach waste (2220g) was sun and oven dried to give 132 g of powder reduced to 70g with (mesh size 112μm). Cauliflower (3628g) after sun and oven drying has given 250g powder reduced to 110g by sieving (112μm). Atomic absorption spectrophotometric analysis of pharmaceutical industry effluent showed the presence of heavy metals such as nickel (661 ppm), chromium (36 ppm), cobalt (9 ppm), zinc (7.2 ppm), copper (2.9 ppm).

The leather industry effluent contained maximum amount of nickel (177 ppm) followed by chromium (81 ppm), zinc (6 ppm), and copper (3 ppm). 0.5g of spinach and cauliflower waste powder were added separately to 15 ml of pharmaceutical effluent (1:30), turnip and radish peel powder 20 ml leather effluent (1:40), agitated at 50 to 200 rpm. Samples were filtered, subjected to acid digestion for atomic absorption. Complete removal of Ni and Co from pharmaceutical industry effluent was found through spinach waste (100% biosorption efficiency). The same was observed for Ni and Cu with cauliflower waste powder. 100% biosorption efficiency of turnip and radish peel powders was found for Ni and Cr from leather industry effluent.

Keywords
Industrial Effluent, Biosorption, Heavy Metals, Vegetable Waste, Atomic Absorption Spectrophotometry
**BIOLOGICAL EFFECT OF PARTHENIUM HYSTEROPHORUS L. AND TAGETES ERECTA L. EXTRACTS ON GERMINATION AND SEEDLING GROWTH OF ZEA MAYS L**

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**Abstract**

Allelopathy is the effect of one plant on the growth of another plant. This effect may be positive or negative thus either promoting or inhibiting the growth of neighboring plants. In the present study the effect of methanol extracts of aerial parts of *Parthenium hysterophorus* L. and *Tagetes erecta* L. on germination and seedling growth of *Z. mays* was studied at 2.5, 5, 7.5 and 10 mg/mL concentrations. The seeds were soaked in extracts of respective concentrations and grown in the presence of water. The results indicated maximum seed germination at 7.5 mg/mL and minimum at 5 mg/mL. The extract had an inhibitory effect on both root and shoot growth at 5 and 7.5 mg/mL manifested by a decrease in root and shoot length as compared to control. Seedling vigor index was maximum at 10 mg/mL and minimum at 5 mg/mL concentration. Maximum tolerance index for *Z. mays* seeds against the plant extracts was recorded at 10 mg/mL concentration. Phytochemical investigation of crude methanol extracts of both the plants showed that *P. hysterophorus* contained flavonoids, phenolics, triterpenes, alkaloids, anthocyanins and coumarins while *T. erecta* contained glycosides, saponins, tannins, flavonoids, phenolics, triterpenes, alkaloids, betacyanins and coumarins. *P. hysterophorus* was found to have strong stimulating effect on growth of maize seedlings as compared to *T. erecta*.

**Keywords**

Allelopathy, Allelochemicals, *Parthenium Hysterophorus*, Seedling Vigor, *Tagetes Erecta*
MEASURING KEY FACTORS CAUSING ACADEMIC STRESS AMONG HIGH SCHOOL AND UNIVERSITY STUDENTS

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Abstract
The academic stress and poor mental health among students has been reported widely all around the world due to increasing demands of academic life and stressful academic activities. There are many reasons due to which stress appears in academic places. This study was carried out to measure the key factors related to academic Stress of high school and university students.

A questionnaire consisting of 34 questions to measure academic stress of students on visual analogous scale (VAS) was used. The data was collected from a sample of 350 students, selected from different schools and universities of Lahore. Exploratory Factor analysis (EFA), Confirmatory Factor Analysis (CFA), ANOVA and regression models were used to explore the dimensions related to academic stress among students and to compare the perceived academic stress with respect to different demographic variables. The reliability measure (0.901) verified that tool was reliable to measure academic stress of students. Nine significant factors were explored using factor analysis that measured different dimension of academic stress in students. The value of CFI (0.830) and RMSE (0.077) confirmed that model was a good fit. Results of (ANOVA) showed statistically significant difference in perceiving academic stress with respect to gender (0.004), class (0.00) and Age (000).

The main causes of academic stress among students were teacher’s teaching method, fear of not meeting with parent’s expectations, Exam’s stress, fear of not meeting with required academic level, lack of interest in the course, fear of not performing well among classmates, class test and assignments and competition with friends and classmates. It was observed that academic stress was significantly different in different age groups and with respect to gender.

Keywords
Academic Stress, Factors Of Stress, Visual Analogous Scale
A REVIEW ON DDOS ATTACKS ON IOT
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Abstract
Internet of things is a network where physical devices communicate with external environment and itself through embedded technology to provide value to human beings. It aims at making communication between every device using internet, which leads to tsunami of connectivities. IoT is covering practical areas from daily life like smart home, smart hospital, smart industry, smart school and many more, promising to make our lives easier by providing cheap and quick access. Besides all the glitters there is indeed another side of IoT as well which is closely related to security. Real question that lies is, can these devices be forced to introduce behavior patterns, damage physical safety and security, or instigate an internet attack on certain target. Distributed Denial of Service attack (DDoS) has been a major threat to IoT because of its limited resources. These devices have computational and storage constraints which makes them more likely to be attacked because security measures in these devices are not effective. This paper will provide a foundation in proposing new detection and prevention mechanisms.

Keyword
Internet Of Things, Ddos Attack, Security, Processing, Resources
COMPARATIVE STUDY BETWEEN LEACH, M-LEACH AND SEP
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Abstract
In this paper we will discuss different models and implementation of the hierarchically clustered protocols that have different energy efficiency to each other in Wireless Sensor Network. Common thing in this network is that a number of the nodes become cluster heads and then cumulate the data of all the cluster members they have and transmit it to the sink node. We assume that a certain number of the sensor nodes provide additional energy resources — this is a foundation of heterogeneity this can be a result of the initial setting but also it can be a result of the evolution of network. We make an assumption that sensors are spatially scattered and are not movable, it is also known that what are the coordinates of the sink and the dimensions of the sensor field. As the first node dies, the performance of such sensor networks is unstable, particularly when node heterogeneity is present. Network Lifetime of Heterogeneous LEACH Protocol for $\epsilon_{ft1}=1$ is much stable. Result proves that energy consumption remains almost same until the death of first node and after that it starts decreasing. LEACH assumes that the nodes have same amount of energy which means they don't take the advantage from node heterogeneity. Whereas SEP, extend the time interval between the start of the network and death of the first node. This can helpful in application where they rely on the feedback from the sensor network. SEP is based on weighted election probabilities of each node to become cluster head according to the remaining energy in each node. We found that in SEP the stability period is prolonged for greater values of supplementary energy from powerful nodes compared to the LEACH protocol.
THE EFFECT OF PREDISPOSING AND ENABLING FACTORS ON NUTRITIONAL STATUS OF CHILDREN AGES 9-13 YEARS

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Abstract
The study has been conducted to show the effect of predisposing and enabling factors on nutritional status of children of ages 9 to 13 years. A cross-sectional study design has been utilized for the collection of data from government schools of Shalimar and Gulberg Towns selected through random sampling technique. 1001 respondents were included in the study in which 563 were males and 438 were females. Nutritional status was determined through Body Mass Index (BMI) after the measurements of height and weight according to the standard procedure protocol. A structured questionnaire was used for the assessment of predisposing and enabling factors. It has been found that 17.4% males were undernourished and 67.1% were underweight and 16.7% females were undernourished and 59.6% were underweight which was attributed to various predisposing and enabling factors. The knowledge towards health and nutrition of females was more as compared to males but the relationship with nutritional status was significant for males (p=0.001) as compared to females (p=0.141) because of socio-cultural factors. Similarly, enabling factors including family type, father and mother occupation and education, and income were also found significant (p<0.05) in determining the nutritional status of children. All the factors were shown to be interrelated to affect the nutritional status of children and further detailed research is needed to determine the effects of Socio-demographic, predisposing and enabling factors.

Keywords
Nutritional Status, Cognition, Malnutrition
COMPARISON OF DOSE DISTRIBUTION OF AAA AND PBC ALGORITHM BASED TREATMENT PLANS IN RADIATION THERAPY
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Abstract
Radiation therapy is of paramount importance when it comes to the research of modalities for cancer treatment. As approximately 50% of cancer patients undergo radiation therapy for either the cure, palliation or control of cancer the aim of research in radiation therapy is therefore the effective delivery of dose to tumor. Advancements in radiation therapy research requires in depth understanding, analysis and provision of information pertaining to modelling of dose distribution in treatment plans. In this regard efficiency of treatment planning system is largely influenced by efficiency of dose calculating algorithms. These dose calculating algorithms have their known limitations. The present study compares the dose distribution of treatment plans based on two dose calculating algorithms namely AAA and PBC by using 31 treatment plans. These treatment plans were first prepared on the basis of PBC algorithm and then recalculated by using AAA. Dose distribution factors which are calculated, compared and analyzed in the present study include dose in case of inhomogeneity, hotspots, cold spots, maximum dose, dose to organ at risk, monitor units and prescribed units. Analysis of treatment plans based on AAA showed in some cases there was slight increase in dose calculated for organ at risk, hotspot and monitor units relative to PBC based treatment plans. However Treatment plans based on AAA depicted that inhomogeneity correction was applied by AAA while calculating dose distribution which was not applied in case of PBC. The study thus recommends that AAA should be preferred for the calculation of dose distribution in treatment plans, however PBC can also be used.

Keywords
Analytical Anisotropic Algorithm (AAA), Pencil Beam Convolution, treatment plan, dose distribution, radiation therapy.
STUDENT’S PERCEPTIONS ABOUT TEACHER’S TEACHING STYLES
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Abstract
The study was conducted to university student’s perceptions of their teacher’s teaching styles. Data was gathered for this study from a sample of 100 university students from two public and two private universities. One questionnaire was used for data collection. Questionnaire was conducted by the researcher with the help of experts and literature. In questionnaire 5 points Likert Scale was used. Students filled the Questionnaire of university Teacher’s Teaching Style. Analysis of questionnaire was performed to check out the student’s perceptions of their teacher’s teaching styles. Conclusions with the help of findings from this study are following: (1) Authoritarian was the dominant teaching style, as perceived by the students. The feeling of the majority students was that their teachers did not have close relationships with learners and highly values his/her authority.

Keywords
Teaching Style, Dominant, Authoritarian, Relationships, Perceptions
Abstract

Caustic injury to the stomach can be complicated by gastric stenosis. A female patient, 16 year of age was admitted to Sheikh Zayed Hospital with a history of corrosive intake and major complaint of dry cough, chest pain, epigastric pain, anorexia, weight loss, constipation and persistent vomiting. According to the patient she intentionally ingested acid about 100ml toilet cleaner in standing position three months ago. She was taken to the hospital, gastric lavage was done and she was pretty fair. After 10-15 days she developed complaints of, anorexia, nausea, vomiting, weight loss, these problems become severe in the last one week when she was taken to the Sheikh Zaid Hospital Lahore. Patient had gastric outlet obstruction (pyloric stenosis) secondary to corrosive intake, A tentative diagnosis was based on history and clinical signs. The diagnosis was confirmed by and endoscopic examination. Side to side antecolic gastrojejunostomy was done alone to bypass pyloric stenosis and duodenum. She received only 5% dextrose water (3000ml) per day through peripheral vein for six days after surgery. Dietitian intertwined on the seventh postop day and after obtaining a complete medical, social and nutritional history nutrition therapy was started. Major objective of the medical nutrition therapy was to improve the overall nutritional status of the patient. High calorie, high protein, textured modified progressive diet was given along with behavior counseling and nutrition education. The patient improved and was discharged from the hospital four weeks following surgery. Follow up was continued on telephone. Patient was continuously advised, and she followed the diet plan as planned. The patient’s weight improved from 34-43 kg in 6 weeks. Over the period of 6 weeks her Hb improved from 10.9-12.6/g/dl and albumin 2.9-3.7/dl. Patient kept following the diet for another two months and her Hb 13g/dl and albumin was 4.2g/dl. Other biochemical values also improved. Patient’s behavior change as the most positive outcome of the case study. Overall patient has a positive prognosis for future, as her physical, psychological, and physiological all statues are showing improvement.

Keywords

Medical Nutrition Therapy, Gastrojejunostomy, Gastric Outlet Obstruction
THE ENVIRONMENTAL RECIPROCITY DEVELOPS ENTREPRENEURIAL SCIENTISTS IN THE UNIVERSITIES

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Abstract
There is growing phenomenon of entrepreneurial scientists in the universities who adopt the hybrid role in academic career. The hybrid role is defined as the dual role of faculty to serve science and society. These scientists are well-publishers, academic supervisors, and teachers. They also provide solutions to exiting problems of society and industry. The study used the multiple case methods and analyzed the cases of ten entrepreneurial scientists in various institutions of Pakistan. The study developed a PESE framework of entrepreneurial scientists with four components of personality, environment, scientific and enterprising. This paper presents environment component and its role in developing entrepreneurial scientists in the universities. This paper presents the theory of environmental reciprocity as the scientists influence the environment with their ideas and valuable contribution. Reciprocally, the entrepreneurial scientists also receive support from the environment once value of their intervention is reached to the society. The environment includes five variables as the society, the institution, the protection, the success stories, and the peer influence. The study presents explanation of these variables along with review of published literature on the phenomenon. The study presents a theoretical framework which explains how the environment contributes in the development of entrepreneurial scientists and entrepreneurial universities.

Keywords
Entrepreneurial Scientists, Entrepreneurial Universities, Research Transfer, Environment, Science and Society
Abstract
Recent emergence of smartphone has greatly facilitated humans and has become indispensable. Many smartphone edutainment applications have been developed for kids and adults. However, there is less work done for the visually impaired. Applications developed for them focus more on learning rather than their entertainment. The focus of our research is to address this gap by designing an android game application, BrailleMan, a traditional hangman inspired game based on braille touch keyboard. Our Mobile Application facilitates them with extensive braille touch keyboard that eliminate the need of using QWERTY keyboard or attaching a separate peripheral device for braille code input. Our game is accompanied by voice to assist visually impaired in locating and interpreting objects. Our application also supports certain gestures like single touch, double touch, right swipe, left swipe that help in engaging with the game conveniently. BrailleMan is incorporated with a Graphical User Interface to make it visually appealing for sighted people as well. We evaluated BrailleMan with ten visually impaired. Our research and continuous interaction with them helped us in designing game. Through this application, we aimed to explore how sighted and low sighted users can share a common gaming experience.

Keywords
Brailleman, Visually Impaired, Braille Code, Gesture, Hangman, Touch Keyboard.
EFFECT OF NATURAL SWEETENERS ON NUTRITIONAL VALUE AND ORGANOLEPTIC PROPERTIES OF SELECTED PAKISTANI SWEET DISHES
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Abstract
The most desirable of all flavors is a sweet taste which affects our senses and often determines the acceptance or rejection of the food product. Sweeteners are chemical compounds, which have a sweet taste that determines their usage as sweetening agents. The purpose of the study was modification of some Pakistani sweet dishes using natural sweeteners to improve their quality characteristics. For the purpose some commonly consumed sweet dishes in Pakistan were prepared using different natural sweeteners and standardized. Fish bowl method was used for selection of sweeteners and the selected one was traditional sweetener (shaker), stevia and date paste. Whereas online survey was conducted to identify eight most commonly consumed sweet dishes. While the basic recipe for each dish was selected again using fish bowl method. The standardized recipes were than modified using the selected natural sweeteners and evaluated for their acceptability in term of organoleptic characteristic using a 5-point hedonic scale. The findings regarding comparison and acceptability of the sweeteners illustrated that there was a positive significant (p-value < 0.05) difference exited. Similarly the nutrient analysis also showed a significant relationship between the sweeteners with a p-value of < 0.05. Dishes prepared with the natural sweeteners have a lower caloric content as compared to that prepared with regular sugar. Concluding replacement of table sugars with natural sweeteners in local sweet dishes is acceptable in term of nutritional as well as sensory parameter.

Keywords
Natural Sweeteners, Stevia, Date Paste, Shaker
SYNTHESIS OF BIOACTIVE N- SUBSTITUTED THIAZOLES FROM 3-INDOLE ALDEHYDE

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Abstract
3-Indole aldehyde is a nitrogen containing heterocycle show significant antimicrobial activity. To explore more antimicrobial potent derivatives of this molecules, heteroclic ring has been fabricated successfully by convergent approach, thus affording N- Substituted Thiazole. Furthermore, the newly synthesized compounds were screened for antimicrobial potential and structural activity relationships was also studied. The products were analyzed by the UV and FTIR spectroscopy.

Keywords
Bioactive N-Substituted thiazole, Anti-microbial, Anti-fungal, Anti-bacterial, 1-Benzazole derivative.
RELATIONSHIP OF DEMOGRAPHIC FACTORS AND NUTRITIONAL STATUS WITH NUTRIENT INTAKE AMONG 11 TO 15 YEARS SCHOOL GOING CHILDREN IN LAHORE

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Abstract
Pakistan as a developing country has alarmingly high rate of malnutrition, as well as micronutrient deficiencies. Healthy and balanced diet is important for physical, psychological and behavioral growth and development at any stage of life, especially in school age. This research was conducted in Lahore to find out the nutritional status and adequacy of nutrient intake of girls and boys attending government schools. Nutritional status was measured by using BMI-for-age. Factors affecting nutritional status of children were identified. Adequacy of nutrient intake was measured by using 24-hour recall method and Food Frequency Questionnaires. Nutrient intakes of children were calculated by using USDA Food Compositional Tables and then were compared with Dietary Reference Intakes (DRI). Around twenty six macronutrients and micronutrients were measured in the diet. From the study it was found out that 47.35% children were thin (<-2 z-score). Children’s age, gender, income, parent’s education, number of family members, and number of siblings were found to be statistically associated with nutritional status of children. The odds ratio of age group, gender, income, parent’s education and occupation, and family members showed significance. Differences in mean value of macronutrients and micronutrients intake was assessed in thin and normal children. Mean values of macronutrients such as energy, protein, and fat and some micronutrients between thin and normal children were different. The p-values generated were statistically significant. It was found that 50 to 60% of children did not meet allowances of essential nutrients. Majority of females were not meeting recommended dietary allowances (RDA). For healthy and easy availability of food to children school lunch programs should be initiated. Also other intervention such as micronutrient supplementation and food fortification program should be focused for health of children.

Keywords
BMI-for-Age, Recommended Dietary Allowances (RDA)
Abstract
Osteoporosis and its related fractures are on rise globally especially among the female and elderly population. Ayurvedic literature and scientific studies in the past have shown the herb *Cissus quadrangularis* (CQ) possess bone forming and anti-osteoporotic properties. This study investigated the effectiveness of crude ethanolic extract of CQ in promoting osteoblast differentiation of murine pre-osteoblast cell line, MC3T3-E1. MC3T3-E1 cells were treated with various concentrations (0.1-200 μg ml⁻¹) of ethanolic extract of CQ (CQ-E) for a week and were counted on day 1, 3, 5 and 7 to determine the effect of CQ-E on growth of cells. It was found out that the ethanolic extract of CQ (CQ-E) affected growth kinetics of MC3T3-E1 cells in a dosage dependent manner with higher concentration being toxic to the viability of the cells. Lower concentrations (0.1-25 μg ml⁻¹) of the extract did not have any effect on the metabolic activity of the cells as revealed by MTT assay. Mitogenic effect of 0.1-1 μg ml⁻¹ of CQ-E was determined on the proliferation of the cells using BrdU-ELISA. The CQ-E treatment at lower concentrations augmented the osteoblast differentiation as substantial increase was observed in the in the ALP activity and mineralization of extracellular matrix compared to the control group. These findings suggest the dose dependent efficacy of CQ-E with lower concentrations being anabolic and osteogenic.

Keywords
Osteoblasts, MC3T3-E1, *Cissus quadrangularis*, Osteogenesis
Effect of Solution Concentration and Seed Layer on the Structural/Morphological, Electrical and Optical Features of Hydrothermally Grown ZnO Nanorods

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Abstract
Zinc Oxide (ZnO) has emerged as the most outstanding representative of wide band gap semiconductors owing to its direct band gap of 3.37 eV and large exciton binding energy of 60 meV. ZnO is an ideal candidate for a wide variety of applications including optoelectronics, biomedicine and gas-sensing. Recently, ZnO nanostructures including nanowires, nanorods, nanotubes, nanobelts, nanoplates etc. have gained much attention because of their excellent tunable electric and optical properties and their potential applications in diverse fields. Hydrothermal growth has emerged as a popular method for growing ZnO nanostructures. In this work, hydrothermal growth was used to grow ZnO nanorods on ZnO and AZO seed layers. Different concentrations (0.025M, 0.05M, 0.075M, 0.1M and 0.125M) of equimolar aqueous solutions of Zinc nitrate hexahydrate and hexamethylenetetramine were used. Nanorods were grown at a temperature of 90°C and growth time was 2 hours. Structure and morphology of the nanorods was analyzed using XRD and FESEM respectively. Effect of different solution concentrations on the mean diameter and number density of nanorods on ZnO and AZO seed layers was investigated. Variation in electrical resistivity and bandgap of the nanorods on ZnO and AZO seed layers with changing solution concentration was also studied.

Keywords
ZnO, Nanorods, Hydrothermal Growth, Resistivity, UV-Vis Spectroscopy
ANTRAL FOLLICLE COUNT (AFC) AND SERUM ANTI-MÜLLERIAN HORMONE (AMH) ARE THE PREDICTORS OF NATURAL FECUNDABILITY HAVE SIMILAR TRENDS IRRESPECTIVE OF FERTILITY STATUS AND MENSTRUAL CHARACTERISTICS AMONG FERTILE AND INFERTILE WOMEN BELOW THE AGE OF 40 YEARS

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Abstract
Despite being born with a significant number of primordial cells which representing the ancestor cells of the germ-line, women experience a depletion of ovarian reserve and sub-fertility mid-way into their healthy lives. The poor ovarian response is a substantial limiting factor amplified with higher maternal age and associated with a considerably lower likelihood of pregnancy. A present analytical prospective cross-sectional study was conducted to explore whether infertile women below the age of 40 years have low ovarian reserve than fertile women of same age, assessed by Antral follicle count (AFC) and anti-Müllerian hormone (AMH), at tertiary care infertility center: Lahore Institute of Fertility and Endocrinology, Hameed Latif Hospital. The study population including 423 infertile and 388 fertile female patients from June 2013 to November 2016. Patients and controls were aged between 25 and 39 years. Serum levels of FSH, LH, AMH were assessed, and AFC was measured by transvaginal sonography on cycle days 2 or 3. A total of 35.6% of infertile women stated a menstrual cycle length shorter than 21 days, while 21% had a regular cycle length between 24 and 38 days, and 43.2%, longer than 38 days. Overall, the two cohorts did not significantly differ on cycle length. The age-specific reduction of the ovarian reserve was similar in both cohorts; serum AMH concentration decreased by 6% (95% CI: 5–8%) and AFC decline by 4.5% (95% CI: 5–7%) per year with increased age. Aged patients (36–39 years) had a 5.3% (95% CI, 1.5; 7.2) higher risk ratio of having an AMH level < 0.7 ng/ml than women of younger age groups (Kruskal-Wallis test, p < 0.01). This study indicates that the possible common observation of low respondent in ART might not be a result of over-representation of patients with an early age-specific decline in the ovarian reserve, but rather primarily as a consequence of age-specific depletion in the stock of developing follicles at the time of recruitment and selection.

Keywords
Antral follicle count, Anti-Müllerian hormone, Infertility, Ovarian reserve, ART
VIABILITY OF FREE AND POLYSACCHARIDE-PROTEIN BASED MICROENCAPSULATED BIFIDOBACTERIUM BIFIDUM ATCC 35914 AND THEIR EFFECT ON THE SENSORIC PROPERTIES OF YOGHURT DURING STORAGE

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Abstract
Health claims of probiotic functional foods are well recognized in this era that include antimicrobial activities, resistance against cancer, total sugar metabolism improvement, serum cholesterol reduction, antibiotic therapy and activation of immune system. Longevity of probiotics in food products is the main concern for maximum utility as value added and therapeutic food products. Microencapsulation is an innovative technique and of prime importance to keep lactic acid bacteria (LAB) alive/viable during product storage and GIT transit. The objective of the present study was to investigate the effect of encapsulation on stability of B. bifidum ATCC 35914 during yoghurt production. The encapsulation was carried out in two experimental plans, I and II. The yoghurt was prepared according to standard procedure. Bifidobacterial cells were added after incubation and then stored to check the effects on pH, acidity, total viable count and sensory attributes. It was concluded from current project that double coated micro beads showed the show less change in pH and acidity as well as higher viability as compared to free cells. The double coated probiotic micro beads when added in yoghurt production along with the starter cultures showed the non-significant difference during sensory evaluation with the control. The viable count of probiotic and yoghurt cultures were affected significantly (p < 0.01) during refrigerated storage of yoghurt. It was concluded from the whole study that double encapsulation using CH 0.8% - WPC 5% has more potential to increase the viability of probiotics than free cell.

Keywords
Bifidobacteria, Microencapsulation, Anti-Cancer, Sensory Evaluation
Abstract
Food quality and safety has a direct link with the packaging and packaging material. When foods are packed in polymer based packaging materials, there is a chance for the development of undesirable flavor and aroma in food items. For that purpose careful preventive measures should be followed to maximize the product safety, quality and shelf life. Polyethylene terephthalate (PET) is one type of polyester or synthetic fibrous material which has wide spread use as packaging material, especially for bottling of juices, gaseous drinks and mineral waters. During processing, packaging, and storage because of temperature and time variations beverages can suffer several important quality changes. At the same time other factors that affect the product quality and shelf life include gas permeability, microbial activity, and sensitivity of flavor & aroma compounds, color changes, vitamin loss, and migration of toxic substances from packaging material into beverages. Likewise storage in polyethylene terephthalate bottles is insufficient to give a satisfactory shelf life unless the product is kept at chill temperatures.

Keywords
Polyethylene Terephthalate, Pet Bottles, Beverages, Quality Factors, Shelf Life
A BLOCKCHAIN BASED FRAMEWORK FOR HEALTHCARE TRANSFORMATION
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Abstract
Technology is evolving day by day and blockchain technology has shown its considerable adaptability in recent years. Most of the focus of blockchain is on the financial industry, but several projects in areas like healthcare are also developing and changing the future. Numerous starting points for Blockchain technology in the healthcare industry are the focus of this report. Blockchain can nail the Healthcare domain. By using the concepts and features of the Distributed ledger, Healthcare industry can be transformed. Blockchain can change the future of the Healthcare Industry. Healthcare records, Lab assessment results, doctor’s perceptions and Minute details of the healthcare industry in the form of transactions can be stored in a decentralized way in the form of blocks, and these blocks can further be linked as per series of event in the form of blockchain in distributed ledgers. Highly complex process and manually intervention can be eliminated. Highly transparent and secure systems can be built on top of blockchain technology by introducing an identity manager.

Keywords
Blockchain and Healthcare Ledgers, Digital Health, Health Information Management, Patient Data, Medical Research
Abstract
Chronic kidney disease is increasing day by day all over the world; this is also known as a chronic rental disease because this disease is life-threatening. To save people from this life-threatening disease, we have given suitable techniques and results in this paper for its accurate and early detection. It will not ensure 100% safety from disease but provide a suitable time to get a cure from it with its early detection. We have used 24 symptoms of chronic kidney disease in this paper which help us to accurately detect this disease with the help of two machine learning classification algorithms, i.e., C4.5 and C5.0. We conclude the results by introducing the medical datasets to all two algorithms separately with the help of the decision tree and the statistical information about the dataset, also this medical dataset is feed into the machine learning algorithms which are built-in WEKA are used for comparison and to check the accuracy of the algorithm. Algorithms used in this comparison are J48, Naïve Bayes and Logistic Model Tree (LMT) are used and them accurately to predict the chronic kidney disease is calculated. This research proved the efficiency of the C5.0 algorithm since it predicted more accuracy, short duration and less error rate as compared to the C4.5 algorithm. Also, the Random Forest algorithm is the best algorithm to predict chronic kidney disease. The best algorithm among different algorithms can be selected prediction model can be used for determining chronic kidney disease.

Keywords
Kidney Diseases, Medical Dataset, Machine Learning Algorithms, Chronic Disease, Weka
ORAL SQUAMOUS CELL CARCINOMA-A SYSTEMS BIOLOGY PERSPECTIVE
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Abstract
Oral Squamous Cell Carcinoma (OSCC) or oral cancer accounts for more than 90% cases of Head and Neck Squamous Cell Carcinoma (HNSCC) worldwide. It has become the most prevalent cancer in Pakistan due to its association with smoking, tobacco, pan (betel squid) and gutka etc. Typical oncogenic mutations are uncommon in oral cancer, thus necessitating a personalized approach for its treatment. Limited prior work has been reported on oral cancer systems biology, therefore there is a need to study oral cancer at systems level. Here we propose a rules-based network of oral cancer using our web-based systems biology platform, Tison. We propose a hybrid model of gene-protein interactions including key molecular players involved in oral cancer progression from literature. We further performed deterministic analysis of network and demonstrated the change in attractor landscapes and cell fates based on specific inputs. Moreover, we introduced stage-specific mutations and found out change in cell fates and attractor landscapes before and after introduction of stage-specific mutations in the network. Lastly, we also screened potential drugs for each mutation and introduced single and combinatorial drug therapy in the network to revert back the cancerous stage to normal cell fates or lead to apoptosis of cancerous cells.

Keywords
Oral cancer, Oral squamous cell carcinoma, Systems Biology, Biomolecular networks, Deterministic analysis
ANALYSIS OF FACTORS INFLUENCING SMALL BUSINESS ENTREPRENEURSHIP IN URBAN PAKISTAN
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Abstract
Today’s era is of economic growth and women comprise of nearly half of the population. In such scenario women are accepted as vital part for the development of any country, on the other hand ratio of working or business women is lower than their male counterpart. Globally the ratio of women in business sector is increasing which is a good sign for families, and economic development of the countries. Apart from the fact that Pakistan is a developing country, women entrepreneurship is on rising in urban areas.

The primary objective of this research is to investigate the factors that can influence the activities of Pakistani female entrepreneurs. This research explores the effect of socio-cultural (in formal) and environmental (formal) factors on Pakistani female entrepreneurs. The methodology includes quantitative analysis, sample data is collected by the questionnaire which is examined by SPSS. This research reveals the finding that although both formal and informal factors influences women entrepreneurs, the effect of informal factors are more significant. This research will help government to develop policies which eventually will help improving capability of Pakistani women entrepreneurs so that they can take part in the development of their country.

Keywords
Female Entrepreneurship, Social Culture Factors, Environmental Factors
Abstract
In the recent era of development, the world has experimented different strategies to implement sustainable growth. These growth strategies have helped regions when they have done tasks in Collaboration, which can also be considered true, mentioning the China-Pakistan Economic Corridor. Pakistan has been greatly benefited by this project both economically and in the context of International Relations. China invested 62$ billion for this specific project. CPEC has created an immense job market for people that were deprived of resources. This corridor helped the nearby communities that were also ignorant of their basic human resources. A study conducted by Sustainable Development Policy Institute in 2015 estimated that about 2% is added to the GDP of Pakistan till 2018, which has developed an extraordinary development in the areas of Economy and creation of a job market. The development of this significant corridor boosted the industrial growth. The transportation sector is also immensely supported by CPEC. Why this project is Eco-friendly can be seen by the growth in Pakistan’s agriculture sector, the municipal infrastructure has also been improved. About 19 power plants have been installed by China. The Gwadar port has been expanded while a new international airport is also constructed in Gwadar. China has always been there, when it comes to supporting Pakistan and CPEC is a valid proof of it. All these sub-domains of a project are benefiting the local community of Pakistan. The main theme of our paper is to highlight the positive aspects of this project so people that are interrelated to the idea of development through International Relations and innovation could have a broader aspect on the CPEC.

Keywords
Development, IR, Innovation, Eco-Friendly and Sustainable Growth.
CLIMATE CHANGE VULNERABILITY OF PAKISTAN AND POSSIBLE ADAPTATION AND MITIGATION OPTIONS THROUGH RESEARCH AND DEVELOPMENT

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Abstract
Although Pakistan contributes very little in global carbon dioxide emissions but it receives a lion’s share of adverse environmental impacts due to its topological position - further exacerbated by its ever-growing population. Owing to increase in average temperature (3-5 °C) frequency of extreme events - heat waves, droughts, dust storms, and floods - has increased. Pakistan’s economy is centralized on agriculture but increased temperature coupled with dry season results in increased evaporation from rivers and thus severely affecting the crop yield. Melting of ice from glaciers and ill-timed monsoon season results in voluminous and intensive floods followed by the upcoming havoc in the form of droughts and waves of hunger. All these catastrophic events result in demise and forced migration of many people by destroying their source of livelihood and infrastructure. Poor socioeconomic conditions and negligible government performance further deteriorates the situation. About 30 % of the energy comes from hydel power plants but increased sediment influx reduces the storage capacity of dams and so is the power generation. Pakistan need adaptive measures rather than mitigatory but limited resources, experts, lack of technological, financial and institutional support constrains the adaptive capacity. Adaptive measures include the development of drought, salt stress resistant crops, reforestation, water conservation strategies, and flood control by building new dams, improving food security, better health care facilities, and use of cleaner technologies. This study highlights the main problems of Pakistan and also suggests the appropriate solutions.

Keywords
Climate Change, Carbon Dioxide Sequestration, Vulnerability of Pakistan, Global Warming, Adaptation and Mitigation Options for Pakistan
AMH AS A PROGNOSTIC MARKER IN RELATION TO BMI AMONG PCOS WOMEN UNDERGOING IVF/ICSI CYCLES

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Abstract
Polycystic ovarian syndrome is a raising issue among women of reproductive age but despite its frequency, its diagnosis is still difficult to make. The aim of the study was to evaluate serum AMH levels among PCOS women regarding their body mass index. For the study, 100 women with PCOS were recruited and divided according to the body mass index: normal weight and obese PCOS, (BMI: 24-26 kg/m2) and (26-29 kg/m2), respectively. Serum AMH levels were compared with different demographic and hormonal profiles in both BMI divided groups. FSH levels were found to be higher in obese PCOS. LH levels were only moderately related to AMH in both the groups of PCOS. AFC and AMH showed positive relation in the study, where group 1 patients had higher association as compare to group 2 and the cause of this variation can be due age and obesity related factors. These evidences support the hypothesis that AMH can be useful marker for ovarian reserve in PCOS as well as reflect certain characteristics of PCOS. In conclusion, AMH levels were found to be correlated with antral follicle count and other endocrine parameters of PCOS, suggesting it is a suitable marker for diagnosing PCOS women undergoing IVF. The study propose the use of AMH in IVF treatment program, as this will increase clinical value for the diagnosis and individualization of treatments. The present study also suggested that decreased AMH levels and weight management can improve ovarian function in obese women.

Keywords
Polycystic Ovarian Syndrome, Body Mass Index, Anti- Mullerian Hormone, Antral Follicle Count, Invitro Fertilization
DES FACILITATED SYNTHESIS OF FUNCTIONALIZED PYRAZOLINES
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Abstract
Environment well-being is most concern area for scientists now a days. Deep eutectic solvents (DES) are emerging as the possible solution of these issues as it is one of the safe and alternate solvent for organic synthesis [1,2]. Pyrazoline is vital heterocycle nucleus for drugs with multi-dimensional properties ranging from biological to material applications. Substituted pyrazolines have been synthesized using Deep Eutectic as solvent via in situ α-iodoketone with high yield and short reaction time. All compounds were characterized by spectroscopic techniques.

Keywords
Des, Pyrazolines, Green Synthesis
Abstract
Democracies all over the world are abandoning the paper ballot system for elections in favour of electronic voting systems. Electronic voting presents a faster and more efficient method of conducting elections. It can make the election process less complex and reduce the chances of fraud if results are sent directly to secure servers instead of being stored in the machine. The chances of human error are also drastically reduced. One of the hurdles of introducing electronic voting systems to Pakistan is the high cost of importing such systems from foreign manufacturers. This project is an attempt to demonstrate the ease of creating a standalone electronic voting machine locally and inexpensively that can be used to replace paper ballot based voting methods in Pakistan. It presents a minimum viable product that can be scaled up with the addition of more complex machinery (such as a larger LCD that can display symbols instead of candidate names), longer code (which can include passwords for administrators) and advanced security measures (such as data encryption and wireless links to secure servers).

In this project an AT89c51 microcontroller controls the voting process through a series of switches using a short and simple C++ program. The rest of the setup consists of a small DC power source, an oscillator, a capacitor and simple tactile switches. The program allows an administrator to control the voting process by initialization for each voter and extracting final results. Voters simply press switches to vote for their desired candidates. The results for each voting iteration are stored in the microcontroller’s RAM.

Keywords
Electronic Voting Machine, Microcontroller
COMPARISON OF VALIDITY, RELIABILITY AND STATISTICAL ANALYSIS OF LIKERT AND VISUAL ANALOGOUS SCALE FOR MEASURING ACADEMIC STRESS OF STUDENTS
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Abstract
The previous studies have shown that responses on different response scales result in different data and therefore result in different statistical analysis. This study was conducted to compare the two response scales; five point Likert (LS) and Visual Analogous Scale (VAS). The comparison was based on reliability, validity and different types of statistical analysis. Two questionnaires containing the same questions on two response scales (LS and VAS) were filled by the same respondents to measure the academic stress of students. A sample of 350 students was taken from various schools and colleges of Lahore. The Cronbach’s alpha, normality diagnostics tests, Factor analysis’, Intra-class correlations, Analysis of variance (ANOVA) t-test, Mann-Whitney U test and Kruskal-Wallis were used to compare the statistical analysis of two scales. It was observed that Likert scale was more understandable as compared to the VAS. The factor analysis showed that factor loadings were different for both scales, for LS eight factors were obtained whereas in VAS nine factors were extracted. The results of ANOVA, t-test, Mann-Whitney U test and Kruskal-Wallis test showed that statistical results were different for the data obtained using LS and VAS to check the difference between groups with respect to different demographic variables. The study concluded that there was significant difference between the statistical analyses of data collected using two different scales (VAS and LS) for measuring academic stress of students.

Keywords
Visual Analogous Scale, Likert Scale, Comparison Of VAS And Likert Scale, Academic Stress Of Students.
QUANTITATIVE AND QUALITATIVE DETERMINATION OF PHYTOCHEMICALS IN SELECTED CITRUS PEELS FROM DIFFERENT AREAS OF PUNJAB

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Abstract

Citrus limonum, Citrus reticulate, Citrus sinenses and Citrus reticulate Blanco are extensively used in our daily diet. They majorly have anti-microbial, anti-inflammatory, anti-carcinogenic and anti-allergic properties. The present study shows the phytochemical screening and comparison of above mentioned citrus peels collected from lower and upper Punjab. The phytochemical screening revealed the presence of particular phytochemicals. Folin-Ciocalteu method with slight modification was adopted to determine phenolic concentration. Gallic acid was used as standard reference compound varying from 465.91 to 7.054 mg/GAE which indicated the highest value by LKW (Lahore kinnow water) and DME (Dera Ghazi Khan mosami ethyl acetate) contained the lowest content. Flavonoid content was measured by adopting quercetin as standard reference compound expressed as mg/QE. Quercetin equivalent varying from 192.231 to 0.775 mg of QE/g which clearly shows that LFW (Lahore fruiter water) contain highest flavonoid content and LMH (Lahore mosami hexane) contains lowest. The overall results indicated that extracts collected from Lahore (upper Punjab) contained highest phenolic and flavonoid content as compared to the samples collected from Dera Ghazi Khan (lower Punjab). The results showed that the difference in the soil and environment of the plant found in two different areas of Punjab may affect its TFC and TPC content.

Keywords
Phytochemical Screening, Total Flavonoid Content (TFC), Total Phenolic Content (TPC).
IMPLEMENTATION AND SECURITY CALIBRATION OF WEATHER MANAGEMENT SYSTEM FOR THE LEAST RAINY AREAS OF PAKISTAN THROUGH BIG DATA ANALYTICS IN QUANTUM REGIME

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Abstract
Water plays a vital role for the survival of life. We get water in different forms of precipitation and rain is the most beneficial of all types. The demand for water is very high throughout the Pakistan, especially where we have limited natural water resources. Summer monsoon season has profound impact in reducing water scarcity in Pakistan. Heavy rainfall results into floods whereas less rainfall creates drought which not only affects the economy but also puts human life in risk. The aim of this research is to manage the movement of clouds from heavy rainfall areas to those areas where there is paucity of water, through satellite using electromagnetic waves. To accommodate such a sensitive satellite data which is paramount to a country, it is required to have some special systems based on quantum mechanics that are more efficient and pregnable than conventional computers. The consequences will be very high of not securing weather management system, implies to country level disasters. In this paper we first discuss the technology behind quantum computer then proposed a secure architecture by employing quantum computers to ensure the security of data transmission for weather management system.

Keywords
Quantum, weather management, electromagnetic waves, big data, security
ISOLATION AND CHARACTERIZATION OF β-GALACTOSIDASE PRODUCING COLD ADAPTED STRAIN

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Abstract

β-D-Galactosidase (EC 3.2.1.23), commonly known as lactase, is an enzyme that catalyzes the hydrolysis of lactose into galactose and glucose. Cold-active β-D-galactosidase has recently become focus of research owing to its application in dairy industry for the production of lactase treated milk products for people inflicted with lactose intolerance and removing lactose from pollutants of dairy industry such as whey that are implicated in environmental pollution. When compared with mesophilic β-galactosidase, using the cold-active counterparts can help in reducing the risk associated with mesophile contamination along with saving energy during the industrial process of lactose hydrolysis. The present study reports the isolation of a cold-adapted strain 4b from Skardu region of Pakistan. The strain produced blue colored colonies when grown on M9 minimal medium supplemented with X-gal, IPTG and lactose as a sole carbon source. 4b was identified as a gram-negative bacillus, which displayed good growth between 15-30°C, with optimum temperature at 20°C hence classified as psychrotroph. For optimal growth, pH was found to be 6.5-7.0 and lactose concentration was determined to be 75 mM. The presence of metal ions, namely Cu²⁺, Zn²⁺, Mg²⁺, Fe²⁺, Mn²⁺ and boric acid in the growth media had inhibitory effect on the growth of 4b, whereas the addition of divalent cation Ca²⁺ neither had stimulating or inhibitory effect. The isolated strain and its enzyme should be explored further for the industrial production of cold-adapted β-galactosidase in dairy industries.

Keywords

β-Galactosidase, lactose hydrolysis, galactooligosaccharide, whey.
Abstract
The tropical algebraic curves formed by tropical polynomials are examined. In this research work, techniques for algebraic curves related to trinomials have been used. The conic sections: parabola, hyperbola and ellipse are graphically represented in tropical mathematics. Our result proposes that these curves are converted into linear pieces which are useful for solving complex system of equations.

Keywords
Tropical Mathematics, Tropical Polynomials, Parabola, Hyperbola, Ellipse.
GREEN CORROSION INHIBITION OF MEDIUM CARBON STEEL BY ONION EXTRACT IN HCL AND SEA WATER ENVIRONMENT

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Abstract
Medium carbon steels are most frequently used for variety of applications due to low cost and excellent formability. Generally, medium carbon steel (Mild Steel) are highly susceptible to corrosion. Numerous protection methods are adopted to prevent mild steel from corrosion. Inhibitors are widely used for reducing internal corrosion of pipes and storage tanks. Therefore, in this study attempts were made to ensure the inhibition efficiency (IE) of onion extract as a green inhibitor. Coupons were immersed in 1M HCL and Sea water environments for 24hrs, 48hrs and 72hrs with different concentration of extract, and IE was examined by weight loss method. It was seen that IE increased with increase in concentration of red onion extract and the maximum efficiency 80-90% was achieved in both environments for 24hrs. In conclusion, Inhibition efficiency of onion extract decreased with increase in exposure time. Moreover, onion extract is effective and non-toxic inhibitor and minimize corrosion attack on mild steel.

Keywords
Inhibitor, Inhibitor Efficiency, Onion Extract.
PREVALENCE OF MULTI-DRUG RESISTANT UROPATHOGENS AMONG PREGNANT FEMALES IN DISTRICT FAISALABAD

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Abstract

Urinary tract infection (UTIs) among pregnant women can lead to devastating complications. UTI-related morbidity among women is 40-50% and is responsible for causing around 150 million deaths/year worldwide. This condition is being exaggerated due to emergence of antibiotic resistance. The present study was carried to determine the complications and associated risk factors in untreated UTIs with special focus to asymptomatic bacteriuria along with drug resistance patterns in pregnant women and fetus. Patients data on demography, trimester of pregnancy, history of previous UTI was collected by self-administered questionnaire. A total of 106 clean-catch midstream urine samples were collected from pregnant females suspected for UTI’s by using sterile containers, from different hospitals of Faisalabad and were cultured according to standardized microbiological testing procedures. Multidrug resistance profiling was done against Ciprofloxacin, Nitrofurantoin, Gentamicin, Amoxicillin, Amoxicillin with Clavulanic Acid, Amikacin, Cefazidime, Norfloxacin, Ampicillin, Ceftriaxone and Cefoxime using the Kirby-Bauer disc diffusion method in accordance with Clinical & laboratory standards institute (CLSI) guidelines. The incidence of UTIs was (61/106) 57.5 %, showing Escherichia coli the most abundant bacteria (23%) followed by Klebsiella (21%), Staphylococcus (18%), Streptococcus (18%), Proteus (13 %) and Enterococcus (7%). A high frequency of UTI (69.7%) was observed among women of age <30 years while lowest frequency (53.9%) was examined among women of age <40 years. However, recurrent UTIs were found in 13 % of pregnant patients. The isolates showing resistance to ≥ 3 antibiotic classes were considered as multi-drug resistant. Statistical analysis showed significant (P<0.05) as well as non-significant (P>0.05) relationship between antimicrobial discs and isolated bacteria. A high resistance was observed against Ceftriaxone and Amoxycillin while Cefoxitin and Nitrofurantoin were found most effective against isolated bacteria. The multidrug resistant patterns of the urinary isolates suggested the necessity of sensitivity profiling before using the antibiotic therapy in pregnant women with UTIs.

Keywords
Multi-Drug Resistance, Pregnant Females, Urinary Tract Infections, Bacteriuria
Abstract
The ideal goal of any anti-cancer therapy is the successful elimination of cancer with almost near-zero damage to the rest of the body. As the term ‘cancer’ is referred usually to refer a wide class of diseases, it is very difficult to suggest a single cure for cancer. The cancer chemo prevention and treatment has thus been a very complicated and challenging area of research. Although a number of treatment strategies have been developed over the last few years after all the increasing understanding of the disease progression and mechanism, the side effects associated with most chemotherapeutic drugs were a serious concern. This further led the research to enter a new era of nanoengineering and nanotechnology to deliver the drugs safely and in a slow release manner thus anticipating fewer side effects. Designing versatile nanocarriers offer efficient drug delivery applications with enhanced therapeutic benefits of drug. Circulation half-life has become one of the major design considerations in the nanoparticle drug delivery systems. By taking cues for designing long circulating carriers from natural entities such as red blood cells has been explored since long. Amphiphilic nanocarriers, liposomes, fall under the heading of such novel carriers which offer high circulation half-life, low risk to benefit ratio of drugs, sustained release and effective targeting. They provide a paradigm for the design of nanocarriers with a broad spectrum of functionality, applicability, and versatility of synthetic drug delivery particles.

Keywords
Nanocarriers, Colloids, Liposomes, Encapsulation, Anticancer Drug Delivery
ESTIMATION OF RADICAL SCAVENGING POTENTIAL, METALLIC CONTENT AND SCREENING OF TPC AND TFC OF \textit{NIGELLA SATIVA} AND \textit{CHICHORIUM INTYBUS} SEED EXTRACTS

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Abstract
Pharmacological properties, affordability to consumers and efficacy of herbs and plants in curing various diseases has provided them renowned interest in scientific communities. \textit{Nigella sativa} and \textit{Cichorium intybus} commonly known as Kalonji and Kaasni respectively are considered as wonder seeds due to their miraculous medicinal properties. To assess their therapeutic potential crude seeds, aqueous and methanolic extracts of \textit{N. sativa} and \textit{C. intybus} were subjected to phytochemical screening, metallic composition, quantification of TPC by Folin-Coicalteu method and TFC by colorimetric method. DPPH assay was employed to quantify anti-radical potential of crude seeds and extracts. Photochemistry analysis showed presence of various phytochemicals. TLC screening showed presence of one class of saponins and terpenoids. Phenolic and flavonoid content was expressed in terms of mg GAE/g and mg QE/g respectively. \textit{N sativa} aqueous fraction had highest phenolic content 298.691 ± 0.059 mg GAE/g. TFC of all samples ranged from 29.170 ± 0.017 to 60.513 ± 0.028 mg QE/g. AOA was compared with standards of AA, GA, and QE. Highest antioxidant activity was shown by \textit{N. sativa} aq. extract. \textit{C. intybus} and \textit{N. sativa} have significant anti radical properties, justifying their curative properties. Potent scavenging potential of aqueous extracts \textit{Nigella sativa} which can act as a promising raw material for therapeutic formulations.

Keywords
Anti-oxidant activity, phenolic content, DPPH assay
DEPENDANCE OF DAILY OUTPUT OF SOLAR PANEL ON SUN’S RADIATIONS AND SOLAR CELL TEMPERATURE IN LAHORE CITY

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Abstract
Solar Panels have become an important requisite of modern life. Over the years continues load shedding of electricity have caused serious industrial and residential problems. Solar Panel is a big remedy to these issues. To get a full benefit of a Solar Panel it is important to monitor it and its environment’s temperature. It is seen that the output and efficiency of the Solar Panel varies in different circumstances. A sample of 40 respondents was taken and was analyzed using SPSS software; the study further revealed that the statistical hypothesis gave positive results, which supported our (view) study. The targeted population was asked a set of questions and the results were obtained from those who have used or are using Solar Panels of different make. It was concluded that environmental temperature is associated with the efficiency and output of the Solar Panel. The research has established the fact that the temperature of surrounding plays an important role in the efficiency of Solar Panel. If installed at a proper place, the working of Solar Panel will improve.

Keywords
Photovoltaics, Solar panel, PV cells, SPSS software.
BIOEFFECTIVITY OF CINNAMON AND LEMONGRASS TEA ON METABOLIC SYNDROME
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Abstract
Diabetes Mellitus, insulin resistance, high blood pressure, dyslipidemia and obesity are interconnected group of
diseases which are collectively known as Metabolic Syndrome. Intervention with naturally occurring
ingredients remains central to the management of metabolic syndrome. In the efficacy study three treatments
were prepared by using different proportions of cinnamon and lemongrass in them. The ingredients were
characterized for proximate analysis, mineral determination, antioxidant potential and antimicrobial effect. The
proximate analysis showed significant change in ash, crude protein, crude fiber, crude fat and nitrogen free
extract content of all treatments i.e. (p<0.05). Results indicated that Cinnamon contains 53.80±3.53 (DPPH
scavenging activity % inhibition), 56.75±1.05 (Β-carotene bleaching activity % inhibition), 314.89±8.01 (Total
phenolic contents mg GAE/g) and 181.95±5.88 (FRAP mmol trolox Eq/g) whilst lemongrass contains
72.5±2.45 (DPPH scavenging activity % inhibition), 40.77±3.16 (Β-carotene bleaching activity % inhibition),
66.7±1.9 (Total phenolic contents mg GAE/g) and 49.7±4.21 (FRAP mmol trolox Eq/g). A 40 days randomized
clinically controlled trial investigated the effect of oral cinnamon and lemongrass tea on body weight and
metabolic parameters like waist circumference, body mass index, lipid profile, fasting blood glucose, systolic
and diastolic blood pressure of subjects with metabolic syndrome recruited according to National Cholesterol
Education Program-Adult Treatment Panel. 40 subjects were recruited and divided into four intervention groups
including one control and three experimental groups. The groups were supplemented with different proportions
of cinnamon and lemongrass [1 teabag (2g) daily]. Consumption of different proportions of cinnamon and
lemongrass for 40 days showed significant improvement in weight (88.38±15.56 to 85.10±13.60 kg), body mass
index (31.00±4.73 to 29.86±5.48 kg/m²), waist circumference (54.19±15.90 to 53.31±15.22 cm), total
cholesterol (210.06±34.41 to 208.09±34.62mg/dL), high density lipoprotein cholesterol (55.94±37.76 to
55.70±38.02 mg/dL), fasting blood glucose (233.46±67.02 to 225.67±64.11mg/dL), systolic (136.69±11.03 to
135.47±11.60mmhg) and diastolic blood pressure (87.22±7.10 to 83.92±6.02mmhg) i.e. (p<0.05). The study
concluded that with supplementation of 2 g of cinnamon and lemongrass for 40 days showed significant
improvements in parameters of metabolic syndrome from a sample of 40 patients recruited from Diabetic
Institute of Pakistan whilst further research is needed to be conducted on larger group for longer period of time.

Keywords
Metabolic syndrome, Fasting blood glucose, Lipid Profile, Blood pressure and Body mass index.
ASSOCIATION OF M235T AND T174M POLYMORPHISMS OF ANGIOTENSINOGEN GENE WITH PREECLAMPSIA AMONG PAKISTANI WOMEN

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Abstract:
Preeclampsia is a progressive and multifactorial disorder of pregnancy characterized by high blood pressure, proteinuria and edema. Preeclampsia is caused by various genes and Angiotensinogen (AGT) gene is one of those common genes whose variants are associated with increased risk of preeclampsia. The reported single nucleotide polymorphisms (SNPs) of the AGT gene include; M235T, T174M, A-6G and G1035A. The association of M235T and T174M polymorphisms of AGT with preeclampsia was investigated among Pakistani women. This study included 100 preeclamptic and 50 normotensive individuals. AGT genotyping was performed by allele-specific polymerase chain reaction (AS-PCR) and PCR products were analysed on agarose gel electrophoresis and polyacrylamide gel electrophoresis (PAGE). Results were statistically analysed on SPSS (Statistical package for the Social Sciences version 21) and genotypic frequency was calculated through Hardy-Weinberg equilibrium by $X^2$ test which showed significant difference in frequencies and percentages of the genotype of M235T polymorphism in patients and controls whereas genotypic distribution of T174M polymorphism of AGT gene showed insignificant association with preeclampsia. This study showed a significant association of M235T polymorphism ($p=0.001$ at $p < 0.05$) with preeclampsia whereas T174M polymorphism ($p=1.000$ at $p < 0.05$) showed no association with preeclampsia.

Keywords
M235T, T174M, SNP, Association, Preeclampsia
ENHANCED EDGE CACHING IN FOG BASED RADIO ACCESS NETWORKS THROUGH AI AND QUANTUM MEMORY
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Abstract
Fog Computing based Radio Access Networks are a promising paradigm for 5th Generation wireless communication technology (5G) having edge devices endowed with some caching and storage capacity, as a key component for reducing caching burden on the cloud server and providing fast access and retrieval at F-UEs in a scenario where IoT based devices requiring ultra-low latency will be used extensively. The amount of static as well as dynamic data requests generated by these real-time applications will be unpredictable and unmanageable shortly. In order to avoid performance degradation of F-RANs in near future, cache resource allocation strategies to increase cache hit ratio, must be redefined in a further better way. Quantum computing, on the other hand, seems to be the future for every kind of classical computing problem having non-linearity and exponential growth of computation and storage with a linear increase in Quantum bits due to its parallelism. In this paper, AI has been engaged in an attempt to enhance the caching capability in F-Aps by updating caching content intelligently, along with the installation of quantum memory in them, dealing with limited storage concerns. To verify our proposed framework, certain simulations are carried out in MATLAB. The results show an inevitable outcomes for F-RANs performance up gradation.

Keywords
F-RANs (Fog Computing based Radio Access Networks), edge caching, F-UE (fog- user equipment), F-AP (fog-access point), Quantum computing
Abstract
The concept of centralization is discussed at first hand for the development of telecommunication system. Up till now, cloud computing was providing with the facilities of centralized services for computing but with the emergence of IoT, unpredictable number of devices will be producing large volumes of data for real-time applications requiring ultra-low latency which will be difficult for it to cater. So a performance degradation for cloud services will be encountered in near future. A new broadband technology, 5G networks, expected to be in operation till 2020, will be dealing with latency issues in communication. It will help power a tremendous increase in development of IoT technology. To handle real-time applications, a new paradigm has been introduced known as Fog Computing, which seems to be a solution dealing such latency issues in computing and communication. This review paper discusses the recent research that has been carried out in 5G Radio Access Network based on Fog Computing: its architecture and system design.

Keywords
C-RAN (Cloud-based Radio Access Network), F-RAN (Fog-based Radio Access Network), IoT (Internet of Things), latency, 5G networks
MITOTIC MOTOR CENP-E COOPERATES WITH PRC1 IN TEMPORAL CONTROL OF CENTRAL SPINDLE ASSEMBLY
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Abstract
Mitotic motor CENP-E plays key roles in chromosome congression and spindle checkpoint satisfaction. We have recently identified and characterized syntelin, a novel selective CENP-E inhibitor (Ding et al., 2010. Cell Res. 20, 1386-1390). Cells treated with syntelin progress through interphase, enter mitosis normally with a bipolar spindle and lagging chromosomes around the poles. Syntelin is an allosteric inhibitor which tightens CENP-E-microtubule interaction by slowing inorganic phosphate release. To delineate the role of CENP-E in reorganization of interpolar microtubules into an organized central spindle, metaphase synchronized cells were exposed to syntelin and other mitotic motor inhibitors. Syntelin does not perturb interpolar microtubule assembly but abrogates the anti-parallel microtubule bundle formation. Real-time image shows that CENP-E inhibited cells undergo central spindle splitting and exhibits chromosome instability phenotypes. Interestingly, inhibition of CENP-E did not alter the interaction between CENP-E and PRC1 but perturbed temporal assembly of PRC1 to the midzone. Surprisingly, inhibition of CENP-E perturbs the temporal control of PRC1 dephosphorylation which led to a persistent phosphorylation of PRC1 and an inhibition of central spindle assembly. These findings reveal a previously uncharacterized role of CENP-E motor in temporal control of central spindle assembly.
SYNTHESIS AND CHARACTERIZATION OF TRANSPARENT CONDUCTING OXIDE AND ITS OPTO-ELECTRONIC APPLICATIONS
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Abstract
Optoelectronic devices are arbitrated on their ability to behave as transparent conducting Oxides. Synthesis and characterization of transition metal doped semiconducting oxide is carried out. Characterization for the structural, compositional and optical analysis was performed. We have studied the behavior of doped oxide ZnO under different Nickel weight percent concentrations. XRD confirms the structural addition of dopant Nickel in the ZnO host lattice. FTIR spectroscopy shows the promising results of the relating bond length of Zn-Ni-O. UV-Visible spectroscopy shows the absorbance edge of ZnO shifting towards longer wavelength. The reduction in Energy band gap of doped ZnO makes it a promising candidate for opto-electronic devices such as photodiodes and photo catalysts. The addition of a Ni magnetic impurity into the ZnO semiconductor lattice shows magnetic behavior also which makes it a potential candidate for Diluted Magnetic Oxides used for Spin electronics.

Keywords
Optoelectronics, Transparent Conducting Oxides TCOs, Diluted Magnetic Oxides.
STRENGTHENING OF PERFORMANCE MANAGEMENT IN LIVESTOCK DEPARTMENT PUNJAB THROUGH DIGITAL TRANSFORMATION
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Abstract
Livestock & Dairy Development Department (L&DD), Punjab has introduced a state of the art ICT based performance management system for ensuring quality of service delivery and performance mapping of service provider in field. It has completely transformed the department into a digital leader among the public as well as private sector. It is a unique system which uses simple USSD technology against 9211 code for the collection of data. It requires no internet or android based smart phones and uses simple GSM network which is not only cheaper but also available across the province. Presently more than 9000 extension staff is user spanning across 25,892 villages of Punjab which have been codified in the system. The system has an active database of more than 9 million livestock farmers along with their livestock profile & coordinates. After every service delivery a confirmatory SMS in local language (Urdu) is sent to the farmer whom the service is being provided. The performances of each staff is also being monitored and quantified effectively as a result of this intervention which is otherwise a dark area in public sector. This system is also act for two way communication with the livestock farmers and target intervention by sending alert messages to focused farmers during flood or out breaks. Recently in February 2018, L&DD has carried out a real time livestock population survey by using this system called 9211 and mapped 3.2 M households having 73 M livestock in Punjab with their coordinates. This digital transformation has enabled the department to rationalize the staff as per animal population for effective disease surveillance, diagnosis and control in province. Further strengthening of digital transformation is need of time for pragmatic strategy to enhance productivity in perspective of food security, socio economic uplift of farmers and export of livestock produce.

Key words
Digital transformation, service delivery, livestock, 9211, ICT.
PROCESSING OF FISH SKIN INTO EXOTIC AND UNIQUE LEATHER BY VEGETABLE TANNING
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Abstract
Tanning is a technique used to convert animal skins and hides into useful end product called leather. Vegetable tanning or bio-tanning is the tanning of skins and hides by using natural tannins extracted from vegetables, plants, animals and microorganisms. It is considered as "green tanning" because of its biodegradation and environmental friendly features. The use of hexavalent chromium “Cr (VI)” for leather tanning is carcinogenic and harmful for human health. Therefore special attention is being paid to use of vegetable tanned leather instead of chrome tanned leather throughout the world. Fish skin is the new alternative raw material source for leather industry due to similarity in strength to cow hide. Fish leather has remarkable and striking status in the leather industry and global fashion industry. The fish skin is versatile and environmental friendly alternative exotic leather. It is the important waste product of aquaculture business and instead of throwing it away it can be used to overcome the scarcity issues of raw materials in leather sector. The leather industry of Pakistan has great interest in environmental-friendly tanning process but unfortunately no commendable work has been done so far. The present study was focused on the vegetable tanning of fish leather using tanning agents extracted from stem barks of Acacia indica, Cassia fistula, Pinus roxburghii, Pinus wallichiana and Tara. Tannins from these plants were extracted in appropriate solvent followed by concentration and spray drying. The isolated tannins were used for leather tanning and the quality of leather was compared to commercially available tanning agents (Tara and Mimosa) used in tanning industry. Quality of leather was checked according to the standards approved by the IUP/4, International Union of Leather Technologists and Chemists Societies (IULTCS) and by ISO 2589:2002. All plants showed good results regarding quality of leather however, the tannin powder prepared from P. roxburghii and C. fistula stem barks gave best tanning results on Fish skins.

Keywords
Vegetable Tanning, Fish Skin, Bark Tannin Powder, Leather, Tannins
Abstract
Mixed reality emerged owning the features of both virtual and augmented reality, taking the world to the horizon of technology. The advancement of this technology will lead us towards a future where people will capable of visualizing the real time holograms of some physical environment around them. However, wearing some MR based gadget is the prerequisite of this technology. This research is motivated towards virtualizing the world, without the need of wearing MR gadgets, in a manner where a change in real world is replicated to virtual world. The idea is to use this methodology to transmit the 3D live streaming of some physical environment to some another environment in the world, allowing people of different places to interact in an effective manner. For the better understanding of this idea, an example of a university is taken where Professors from all over the world are selected to teach students the subjects they are excelled in. Professor will be virtually present in a class and vice versa. Students could feel the physical existence of a teacher and could query Professor like the way they do in class without any hesitation. This approach will also capture the body language and gestures of Professor, which matters a lot while delivering a lecture enabling better understanding of a lecture to students.

Keywords
Virtual Reality, Augmented Reality, Mixed Reality, Hologram, Telepresence,
SYNTHESIS OF ANTIMICROBIAL BENZOPYRROLE ANALOGUES
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Abstract
Benzopyrrole alkaloids play tremendous role in pharmacological profile as an incipient antibiotic as well as imperative nucleus of majority of drugs. In this research, two novel versatile bioactive analogs of 2,3-Benzopyrrole via novel routes were developed to analyze their potential on the selected pathogenic bacteria for microbial evaluation. All the synthesized compounds were also exposed to the different spectral techniques.
Abstract
Knowledge sharing and processing being a substantive and decisive technique for cognitive robots depicting and understanding vaguely identified tasks. The purpose of knowledge sharing is to make robots more flexible to general performance and behave efficiently and autonomously. While performing the intended tasks a robot requires precision and control program. The cloud based knowledge sharing in robotics works as a computing resource to enable robots bridging the disruption or gap in vague description of task and the details of information necessary for the execution of daily casual manipulative task. A knowledge sharing system requires description based on logic providing action centered representation in specific mechanism, observation and experience are acquitted through cognitive ground concepts, reasoning, multitenant applications (IoT) and uncertainty management. The components representing specific robots knowledge components and to represent them in a knowledge base that is formally explicitly shared between cloud and robot service applications. The control decisions are formulated with inferred tasks based on the knowledge sharing during the allocated task execution. The cognitive robots of the modern era attaining manipulative tasks on human scale requires to be equipped with the mechanism of knowledge reasoning and representation of knowledge remotely, and sharing the service aiming at facilitating their capabilities on the basis of attention mechanism and allocating resources with momentary intentions and demand evaluation on the basis of requirements.

Keywords
Knowledge Sharing, Cognitive Robots, Internet of Things, Cloud Robotics, Attention Mechanism
RECOMBINANT CLONING OF MYCOBACTERIUM TUBERCULOSIS PPE ANTIGENIC PROTEIN IN E.COLI
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Abstract
Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis. It affects 2-3 million people annually. The treatment and prevention of this disease depends upon early diagnosis and effective treatment. Currently, the diagnostic tests for TB are not sensitive and rapid enough, also available BCG vaccine used against TB provides poor protection in adult pulmonary TB with varying efficacy. It has been speculated that mycobacterial PPE proteins may play a role in evasion of host immune responses, possibly via antigenic variation. These families comprise the potential B-cell and T-cell epitope antigens and can be used for diagnosis and vaccine production. This study aimed to clone immunodominant PPE antigen Rv 3425 in E. coli. It is absent in BCG vaccine, making it a suitable antigen for diagnostic tests and has experimentally been proven to give better diagnostic response than ESAT 6 in pulmonary TB patients. Rv 3425 gene fragment was amplified using PCR. The purified DNA fragment was ligated into pTZ57R/T through T/A cloning. Ligation was confirmed through colony PCR and restriction analysis. After restriction with appropriate restriction enzymes, the DNA fragments corresponding to Rv 3425 was cloned in pET28a(+) expression vector. Cloning of Rv3425 in E.coli is a valuable strategy for production of the recombinant protein as M. Tuberculosis is a pathogenic bacterium. Cloned Rv3425 can later serve as potential diagnostic marker and/ or vaccine candidate.

Keywords
Mycobacterium Tuberculosis, Ppe, Rv3425, Cloning
PREVALENCE OF PARASITIC CONTAMINATION IN LEAFY RAW VEGETABLE CONSUMED IN LAHORE, PAKISTAN
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Abstract
Fresh raw vegetables are source of many nutrients and vitamin so are very important for healthy balanced diet. But they also could be a potential source of parasitic infection among people. The present study was planned and conducted to examine the level parasitic contamination in freshly eaten uncooked vegetables. Three vegetables was studied: cucumber, cabbage and lettuce. 50 samples of each vegetable was collected, comprising of 150 vegetable sample in total. The samples were analyzed through sedimentation and floatation method. Vegetables samples were examined using alight microscope. Overall prevalence of parasitic contamination among the sampled vegetable was 14%. Among the three, Lettuce was most contaminated, followed by cabbage and cucumber was found to be least contaminated. Parasite observed during the study include: Entamoeba histolytica (28.5%), Balantidium coli (14.28%), Fischoederius cobboldi (14.28%) Coccidia spp (9.5%), Cooperia spp (4.76%), Ostertagia circumcincta (4.76%), Fischoederius cobboldi (14.28%), Diphyllobothrium latum (4.76%) and Toxora spp (4.76%). Among the vegetable market and shop, most of the contamination was observed from vegetable collected from the big open central markets. Results showed that raw vegetables can act as carrier of parasites leading to parasitic infection among people.

Keywords
Raw Vegetables, Parasitic Infection, Prevalence Of Parasites
CLOUD COMPUTING INFLUENCING FACTORS IN HIGHER EDUCATION INSTITUTES IN DEVELOPING COUNTRIES: A PROPOSED MODEL
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Abstract
Higher Education reflected as a great asset that contributes positively to the economy and social well-being of any country. The objective of Higher Education is to facilitate students to succeed in life in communities, workplace and in their private lives. However, with the rise in the number of students, the separate need of workplace and the educational services cost build pressure on HEIs to compose new educational models that can fulfill new needs of society. Information & Communication Technology plays a very vital role in higher education. It provides many services to share educational data and provide education services at less cost. Now, many of the education institutes adopt cloud computing to get its benefits and increase performance. Cloud Computing is an excellent alternative for educational institutions which are especially under budget, shortage in order to operate their information system effectively. Cloud Computing is becoming an adoptable technology because of its dynamic scalability and usage of virtualized resources as a service through the internet. The aspiration of Higher Education is to make possible students successful in life, in the workplace, and in their private lives. The advantage of cloud computing is persuading HEIs to switch their computing activities to the cloud. The cloud computing services adoption has raised the economy, agility, speed, infinite elasticity, and flexibility, which contributed to the improvement of educational services. In developing countries, cost-efficient hindrance, computation energy, technical workforce for the management of data, techniques to analyze resources, licensed applications no longer joint teaching capability are the primary issues faced via the institutes. These factors significantly affect learner & researchers of developing countries who have retrained. Although, Cloud Computing technology is utilizing in the education sector; many HEIs still do not get the entire benefits from its features. Many features like complexity, relative advantages, top management, compatibility, support, institution size, government provider and government support and adoption plan are some influencing factors, which support the adoption of Cloud Computing technology in HEIs. We found 6 countries where research articles were published in E-Learning cloud computing. These countries are Saudi Arabia, Pakistan, India, Qatar, Nigeria, and Malaysia. We identify the influencing factors of cloud computing adoption in Higher Education Institutes in Developing Countries. This paper has given a review of influencing factors of cloud computing technologies in Higher Education institutions. We have discussed the importance of cloud computing in the education system in developing countries and highlighted the influencing factors in higher education institutes. Developing countries mostly faced an issue of security and privacy while placing their data on the public cloud. To resolve this issue a model is proposed. We have combined the main components of different educational models and proposed a new model. It uses a mobile application service to track the location of a user and enables the user to get different educational services. The user can enter his requirements and location through this mobile application service. The requirements based on the educational perspective. This model will provide security as well as it will cost low and facilitate the user to get educational services.

Keywords
Cloud Computing; Higher Education; Security; Develop Countries
DETERMINATION OF ANTIBACTERIAL ACTIVITY OF BUTANOL BASED EXTRACTS OF ILLICIUM VERUM AGAINST ESCHERICHIA COLI, STAPHYLOCOCCUS AUREUS AND KLEBSIELLA PNEUMONIAE

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Abstract
Emergence of resistant or multi-resistant bacterial pathogens against synthetic drugs has led to the extensive investigation of plant based metabolites for the novel antimicrobial compounds. *Illicium verum* has been widely reported in traditional and scientific literature for its various therapeutic properties. This study determined that the butanol based extract of *Illicium verum* have a high phytochemical index as 7 out 10 tested phytochemical compounds were found to be present in it. Antimicrobial activity of the 1mg/ml and 0.5mg/ml extract was then evaluated against three clinical bacterial isolates; *Escherichia coli*, *Staphylococcus aureus* and *Klebsiella pneumoniae*; using well diffusion assay. The ZOIs recorded were highest against *Escherichia coli* at both concentrations, followed by *Klebsiella pneumoniae* and *Staphylococcus aureus*. Minimum Bactericidal Concentration was recorded to be 0.1mg/ml against all three strains using tube-broth dilution method followed by drop-plate method. These results suggest that *Illicium verum* can prove to be a highly potent antibacterial natural alternative to synthetic drugs, and can be used as a strategic component against the pathogenic strains. Further studies for the isolation of antibacterial components from extracts of star anise should be carried out that may lead to the development of cheap, novel and effective drug.

Keywords
*Illicium Verum*; Phytochemical Analysis; Well Diffusion Assay; Tube-Broth Dilution Method; Drop-Plate Method
DETERMINATION OF REPELLENT ACTIVITY OF ORGANIC EXTRACTS OF ILLICIUM VERUM AGAINST Aedes Aegypti

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Abstract
Mosquito borne diseases including Malaria, Dengue fever, yellow fever, encephalitis \textit{etc.} are prevalent in developing countries. Along with temperature of the body, human body secretes substances \textit{e.g.} sweat and expired CO\(_2\) that acts as attractants to mosquitoes. Mosquitocides are used widely as these are cost effective. Most of the mosquito repellents \textit{e.g.} DEET that are available in the market are inorganic in nature. Synthetic mosquitocides and repellents not only have negative impact on the ecosystem but also have harmful side-effects on humans. In this study various extracts (acetone, ethyl acetate and methanol) of aromatic fruit and seeds of plant star anise (\textit{Illicium verum}) are being investigated for mosquito repellent activity against \textit{Aedes aegypti}. For this standard protocols devised by World Health Organization (WHO) are being followed. This study may result in the development of plant based organic ecofriendly and safe to use repellents.

Keywords
Mosquito Repellents, Dengue, Organic, \textit{Illicium Verum}, Ecofriendly
LEACH, SEP AND ZSEP
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Abstract
Wireless Sensor Network (WSN) is a blend of huge measure of low power sensor hubs. LEACH, SEP and ZSEP are the piece of this system. LEACH is a less vitality expending bunching various leveled convention. LEACH based sensor systems are utilized to diminish framework delay and lessen vitality utilizations. SEP is a small scale sensor systems which accomplishes vitality capable, mountable steering and reasonable media access for sensor hubs. SEP is a heterogeneous mindful convention which is set up on weighted race probabilities of every hub to wind up group head as per the remaining vitality in every hub. It is established that SEP yields longer security area for higher estimations of additional vitality brought by increasingly ground-breaking hubs. Z-SEP is a half and half steering convention for heterogeneous WSN's. In Z-SEP convention, a few hubs transmit information straightforwardly to base station while some utilization grouping procedure to send information to base station as in SEP. Results have demonstrated that Z-SEP improved the solidness period and throughput than existing conventions like LEACH and SEP.

Keywords
WSN, LEACH, SEP, Z-SEP, Heterogeneous, Low Power Sensor, Network
PREPARATION OF ANTI-AGING CREAMS WITH ACTIVE INGREDIENTS EXTRACTED FROM NATURAL SOURCES AND COMPARATIVE STUDY OF THEIR ANTIOXIDANT ACTIVITY

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Abstract
The anti-oxidants present in oranges are strong in fighting with free radicals that damage healthy skin cells. Besides that, these free radicals play a momentous role in forming wrinkles and slumped cheeks. The substantial amount of “Ca” in orange peels is likewise effective in protection against premature aging of skin. Essential oil of Frankincense is considered as a powerful mediator for treating skin conditions. It is the finest oil to refresh and beautify skin if applied topically. The frankincense anti-aging cream will be the best way to provide proper nutrients to the skin. Dried Pakistani kinno peels were used to extract 100% pure essential oil by water distillation. Frankincense tears of species Boswellia’s ferenera were imported from Oman and 100% pure oil was extracted by water distillation. Relative activity was determined by DPPH, FRAP and TPC. GC-MS analysis shows 50 different compounds in Frankincense oil and 45 different compounds were determined in orange peel oil. Not only pure oils, their blends with cream gave similar results that both have good level of antioxidant activity but orange peel oil is superior in all aspects and gave better results and values.

Keywords
Anti-Oxidants, Orange Peel, Frankincence Oil
EFFECT OF MICROWAVE IRRADIATED WATER UNDER DROUGHT CONDITIONS ON GROWTH PARAMETERS OF MAIZE
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Abstract
Productivity of agricultural crops is decreasing due to environmental stresses. One of the factors for affecting agricultural crops are drought, microwave radiations and chemical pollution. Among these crops, maize is the major crop which gets affected by drought at every stage of its life with drought and microwaves. This research has been conducted on maize. In current study, variety DK-6317 of maize was subjected to drought conditions (S1 and S2) and then they were treated with 90 seconds microwave irradiated water heated for one and three days gap. Along with chemical analysis of plant, soil and water, photosynthetic rate using IRGA was also measured after the plants were subjected to two weeks of experimental treatment design. Under this condition, fresh weight of Stress 2 was comparatively greater than that of Stress 1, Stress 2 showed higher dry weight while length was pronounced to be same in Stress 1 and Stress 2. Relative Water Content was found to be higher in Stress 1 i.e. 2.84% than in Stress 2. Stress 1 had higher concentrations of Na+, Zn2+, Mn2+ and Cu2+ in it while Ca2+ was higher in Stress 2 and K+ tended to be same in both the stresses. Soil if Stress 1 was more rich in K+, Ca2+, Na+ and Zn2+, whereas, Mn2+ concentrations were higher in Stress 2 soil and Cu2+ concentrations were same in soils of both the stresses. Water irradiated with microwaves had higher concentrations of Na2+, Ca2+ and Cu2+ in it only while other nutrients were found to be deficient in it. In photosynthetic rate, CO2 assimilation was slightly higher in Stress 2, i.e. 5.02 mMol, transpiration rate was slightly higher in Stress 1, i.e. 2.82 mMol while stomatal conductance was slightly higher in Stress 2, i.e. 40.06 mMol. Microwave radiations increased the nutrients in plant, water and soil subjected to microwave treatment. Genetic and anatomical researches are needed in future to study the effect of microwaves and other waves falling in the same spectra on plants as well as human beings.

Keywords
Microwave, Maize, Drought, Growth, Photosynthetic Rate (IRGA)
ISOLATION AND IDENTIFICATION OF *H. pylori* FROM POULTRY MEAT IN LAHORE, PAKISTAN

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Abstract

Poultry meat is an important source of protein worldwide as it is very economic and contains more amino acids as compared to the other bird’s meat. Biological value of poultry meat is very high due to essential fatty acids present in it. In slaughter houses, chickens are slaughtered and visceral organs are removed by hand and the corpse is evacuated. Organs like liver, heart and gut are collected. These organs are mostly filled by spill of the intestinal contents. So many people eat chicken daily as a source of animal protein in the world which is usually the source of *H. pylori* associated diseases. The research aim to isolate and identify *H. pylori* from poultry meat samples collected from retail shops of Lahore, Pakistan. Up till now 40 samples (liver, heart and stomach) have been collected and inoculated on Brucella blood agar base. Positive samples were further tested by catalase and urease test followed by gram staining. The results were as expected. *H. pylori* was isolated from 2 of the stomach samples which shows a high risk of zoonotic diseases associated with *H. pylori*. Antibiotic resistivity is yet to be tested. The literature shows that there is 100% resistance for streptomycin; 85.7% for amoxicillin and penicillin; 71.4% for oxytetracycline, nalidixic acid and ampicillin; 57.1% for sulfamethoxazole and erythromycin; and 42.9% for neomycin, chloramphenicol and norfloxacin.
Abstract
Occupational painters are exposed unknowingly to increased risks associated with lead in paints on a daily basis. Since major portion of paints being used contain high amounts of lead, increased risks of glomerular as well as tubular kidney dysfunctions are posed by occupational painters. These renal dysfunctions can be detected by the help of biochemical markers. The research is directed to point out the toxic effects on kidneys caused by various lead compounds found in paints. The aim of the research is to determine the creatinine, blood urea nitrogen (BUN) and lead levels in blood serum of subjects and to calculate the Glomerulus filtration rates of the subjects while comparing these to controls.
Blood samples of controls and occupational painters were collected. These samples were then tested for creatinine, urea and lead values followed by the calculation of their GFR levels. A comparison between results of the subjects and the results of the healthy individuals was done. Various other parameters were linked as well. A significant increase in renal damage was found out in occupational painters.
HEART ATTACK DETECTION IN ANIMALS
BY HEARTBEAT SENSING USING IOT
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Abstract
Heart disease is any state of the heart or blood vessels which interrupts the normal functioning of the heart and vasculature to distribute oxygenated blood all over the body. Heart attack kills life after three attempts but it can also be dangerous in the first attempt. If regular checking on health is carried upon then we can detect so many diseases in human and animals before time. Heart attack is not easy to detect in animals like cat, dog chimpanzee. This paper proposes a technique to overawe the chances of heart diseases and attack in animals. This system will help to decrease the death rate and will be supportive in early detection of heart attack. The system monitor the heartbeat using a heartbeat sensor along with other readings through sensors and the readings are transmitted over the Internet. The high heartbeat rate limit and low heartbeat rate limit are provided by user to the sensor which helps in alerting if heartbeat rate is low or high. Two types of circuits are used which are transmitting circuit which is with the animal and the other is receiving circuit which is with the doctor. After gathering data on regular basis it is passed through fuzzy inference system for predicting the heart attack chances in animals. The fuzzy system includes three main steps that are fuzzification, rule base and defuzzification. Body temperature, heart rate, blood pressure are taken as input parameters that are collected using sensors. MATLAB is used as the development tool for the fuzzy system.

Keywords
Heart Attack, Heartbeat, Internet Of Things, Sensor, Fuzzy System
SECURITY ISSUES IN WBAN
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Abstract
The advancement in technology—specifically low-power micro-electronics sensors and their connectivity, has enabled the widespread proliferation of devices that can autonomously monitor patients with medical conditions in real-time. Multiple tiny sensors act as independent nodes that are placed on, or inside the human body while being connected to medical devices, form a network known as WBAN (Wireless Body Area Network). It is a futuristic healthcare system that collects data about the patients’ physical conditions, such as body temperature, blood pressure, and pulse etc. WBAN collects data in real-time and generates a large amount of data consisting of personal information about the patient, which may be stored on the cloud. People might get insecure and consider using such devices as a risk as these could be used for monitoring or tracking purposes by the government or private companies. However, there is a possibility that the data could be stolen and misused in order to cause threats to the individuals. Recent years have witnessed an exponential rise in cyber-attacks on these networks. WBANs are light-weight in nature so traditional security algorithms cannot be applied to them. This paper discusses the various security challenges that arise in WBAN and their proposed solutions.

Keywords
Wireless Sensor Networks (WSN), Micro-Electronics, Sensors, Nodes, Cloud
DG-MATE (AR BASED DIGITAL GYM INSTRUCTOR)
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Abstract
Augmented Reality (also known as AR), refers to a view of the physical real-world environment with superimposed computer-generated images, hence altering the perception of reality. AR technology is also known to bring virtual objects into the surrounding real-time environment and has also showed up as a solution to the difficulties observed by the 3D environment. However, AR also provides an interesting way to indulge people in the daily exercise routine. There are some mobile apps for Android and iOS that facilitates males and females as gym instructors with a variety of exercises. The existing apps either comprise of video tutorials or animated instructors to guide the users for exercises. Users can either tell their level of exercise to the app or go on with the flow of the app. Most of these apps offer either a trial version or a free version with limited features and the paid versions come with complete functionalities. DG-MATE (Digital Gym Mate) is an AR-based mobile application that helps the user to perform gym exercises at home through demonstration. It makes for an interesting approach to learn and perform exercises and understand how exercise machines are to be operated. However, the proposed system has laid more emphasis on cardio exercises. The digital gym instructor gives a 360 view of the instructor at the time of the workout. The application will be built by incorporating Unity, C# and Vuforia.

Keywords
Augmented Reality, AR, DG-MATE, Digital Gym Instructor, 3D, Exercise, Health
COMPARATIVE CASE STUDY: Zn-Ni-O BASED MATERIALS FOR QUANTUM COMPUTERS

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Abstract
Quantum computing is the future of our computer technology, the challenges we face in making the dream of Quantum Computing a reality are potential semiconductor materials i.e. magnetic in nature to undergo Spin manipulation operation which is essential for Quantum computing devices. Quantum computers need Ferromagnetic based materials to operate on the spin-electronic fundamental principles. In this research we have investigated through a case study; the doping mechanisms for the efficient doping of Ni (magnetic material) doped in a semiconducting oxides (ZnO), characterization analysis for the structural and magnetic behavior were reviewed. The behavior of doped oxide have been studied; ZnO under different Ni weight % concentrations. Promising results of XRD has confirmed the structural addition of dopant Ni in the ZnO host lattice. By the comparison of two synthesis techniques i.e. Sol-gel method and Co-Precipitation method, it was established that VSM (vibrating sample magnetometer) measurement of Zn-Ni-O nanostructure exhibits hysteresis loop at room temperature confirming the behavior of the samples to be ferromagnetic, facilitating the spin electronics phenomena which is a fundamental requirement for quantum computing. A material that can be mass produced and manufactured in abundance for building of quantum computers.

Keywords
Quantum Computers, Spin-Electronic, Ferromagnetism, Diluted Magnetic Oxides (DMS), Co-Precipitation, Sol-Gel.
ASSESSMENT L2 MOTIVATION USING HIERARCHICAL FUZZY INFERENCE SYSTEM

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Abstract
During this analysis, a new “Hierarchical Fuzzy Inference System” (HFIS) is proposed for the assessment of motivation of second language (L2M). The proposed-AL2M-HFIS based mostly expert-system will categorize level of L2M into Weak, sensible or robust. AL2M-HFIS based mostly expert-system for L2M is developed on the idea of the rules from the expert of L2 (English). AL2M-HFIS based mostly expert-system uses input parameter like Milieu, use of technology, instrumentality, Interest in L2 community and use of technology (like use of simulation, use of kindle and use of computer/Tab) for various layers. This analysis articles conjointly analyses the parameters and also the results achieved by mistreatment the proposed-AL2M-HFIS based mostly expert-system of these parameters and results are use with the expert L2(English). The accuracy of the proposed-AL2M-HFIS based mostly expertsystem is a lot of exact as compare to others approaches used for it.

Keywords
(L2M, HFIS, Expert-System, L2, Simulation)
NFC PAYMENT SECURITY WITH CLOUD BASED AUTHENTICATION SYSTEM
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Abstract
NFC (Near Field Communication) is a new medium of wireless communication. NFC technology is now widely introducing in smartphones. NFC technology in smartphone has made them capable of contact-less payment on POS terminals. The security protocol used for contact and contact-less payments is named as EMV (Europay Master Visa). EMV sets the security standards for online transactions in contact and contact-less payments. When deeply analyzed, EMV protocol has security vulnerabilities in (1) Mutual Authentication and (2) Exchange of banking information between payment device and payment terminal. As NFC payment involves exchange of sensitive data in open environment within a range of 10 centimeters, risks are involved for data being theft. In this paper, we introduce a cloud based security protocol to overcome the vulnerabilities in EMV standards. The authenticity of this protocol is analyzed using Scyther tool. The protocol uses an authentication server hosted on cloud and asymmetric encryption in mutual authentication and exchange of banking data between payment device and payment terminal.

Keywords
Near Field Communication (NFC), Europay Master Visa (EMV), Cloud, Point Of Sale (POS), Security
FABRICATION OF NI DOPED ZNO NANOPARTICLES BY COPRECIPITATION METHOD

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Abstract
The High surface to volume ratio, less band gap and effect of quantum confinement make nanoparticles beneficial to exhibit strong optical, catalytic and magnetic activities. Transparency and vacancy of oxygen in ZnO nanoparticles enhance its significance to show strong activities as compare to its bulk material. The doping of transition metals like Mn, Ti, Cd and Ni enhance optical, magnetic, thermal and structural properties of ZnO nanoparticles. This research work reports about the synthesis of ZnO and Ni doped ZnO nanoparticles. The investigation has been made to study the effect of Ni-doping on the ZnO nanoparticles. The Ni doped ZnO nanoparticles were synthesized by co-precipitation method. The surface structure of doped and undoped ZnO was investigated by X-ray diffraction (XRD) and Scanning Electron Microscope (SEM) which confirms that the obtained product is in nanometer range. Doping of Ni on ZnO was verified by energy dispersion X-ray analysis. The Band Gap analysis is studied by ultra violet visible spectrum which reveals incorporation of Ni on ZnO crystals.

Keywords
Band Gap, Oxygen Vacancy, Co-Precipitation, X-Ray Diffraction (XRD), Scanning Electron Microscope (SEM)
Abstract
The aim of this research is to foreground the environmental issues explored in twentieth century Bengali Fiction by female writers. The objective is to gauge the consciousness of the nexus between socio moral values and the connection with the physical environment. The profound uncertainty experienced by the individual foregrounds the issues of ecological dislocation, physical estrangement, and economic depravity and uprooting. The research borrows from Environmental theories, and Eco-Marxism. Research endorses that the violators of ecological wisdom are facilitated by the motherly instinct in nature. Thereby accommodating bipolar realities interpreted in term of energy zones.

Keywords
Ecological Wisdom, Bipolar Realities, Energy Zones, Eco-Marxism
Abstract
This research aims to explore eco poetics in Punjabi Sufi poetry as a tactical strategy to reinventing the real self. The objective is to centralize the Sufi consciousness that decolonizes the marginalized self through the process of initiation. It raises the following questions: at what point does the separation from “zaat” set in; what entails the initiation, and at what stage does the habituated human return to claim a new historical consciousness? The topic undertaken hasn’t yet been explored in world literature(s) with reference to the zonal interpretations of spatial settings against animal imagery in Mian Muhammad Baksh, Sultan Bahu, Baba Buleh Shah and Pir Mehr Ali Shah Sahibs (RA) selective sufi discourse. It borrows from eco critical theories propagated by Laurence Buell, Serpil Oppermann, and Dana Philips. Research proves that sufi discourse is more than a linguistic repertoire rather a process encompassing the personal and the global space within which rituals, history, and human consciousness evolve.

Keywords
Tactical Strategy, Eco Poetics, Initiation, Historical Consciousness, Reinventing Paradigms
VARIATION IN NUTRITIONAL, PHYTOCHEMICAL COMPOSITION, ANTIOXIDANT, ENZYMATIC AND ANTIBACTERIAL PROPERTIES OF FRESH AND OVEN DRIED WILD LEAF EXTRACTS OF MOUNTAIN AND PLAIN AREAS OF KHYBER PAKHTUNKHWA PAKISTAN

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Abstract

Olive leaves are rich source of potential bioactive compounds which have several health benefits. Crude extracts of fresh and oven dried olive leaves from mountain and plain areas were compared for nutritional value, phytochemical screening, chemical composition, antioxidant, enzyme and antimicrobial activities. Oven dried leaves of mountain plant were found high in total phenolic contents 39.95 mg GAE/g, ash 8.17%, lipid 8.03%, carbohydrates 42.62%, protein 22.21%, crude fiber 11.39% and energy value of 331.6 Kcal/100g, while fresh leaves of mountain plant showed higher quantity of antioxidant activity 64.06%, enzymes activity (SOD 21.23, CAT 9.05 and POX 17.21 U/mg protein), and antimicrobial potential against E.coli, S aerous and Pseudomonas showing inhibition zone of 9.8, 14.6 and 11.6 mm. The preliminary qualitative phytochemical analyses showed that the fresh and dried wild olive extracts of both areas contained flavonoid, saponins, steroids, terpenoid, cardiac glycosides and phlobatanins.
RUTF: EMERGING APPROACH TO COMBAT MALNUTRITION
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Abstract
Globally, 300 million children are malnourished and more than half of them resides in the 3 countries of south Asia including Bangladesh, India and Pakistan. Food based approaches are promising to tackle the nutrition related problems. The development of RUTF, combined with the adoption of community-based management and treatment of acute malnutrition has attained attention to address hidden hunger. There are several health reasons that RUTF is considered as essential for management of children who are affected by uncomplicated severe acute malnutrition and also those who retain an appetite. It provides all the essential nutrients required for recovery with better shelf life, does not spoil easily, even after opening due to less water content. Their use is associated with minute risk of bacterial contamination thereby its demand is increasing to mitigate nutritional deficiencies. RUTF are imported in Pakistan to tackle child malnutrition status but beyond its vast useful impacts, procurement is impacting Pakistan’s economy. The use of alternative and less expensive RUTF produced from local resources can reduce their cost by 12-14% and increase in local availability & acceptability. Preparation of Locally based RUTF is an emerging approach to utilize local raw materials/products which retained essential nutrients thus reduce the time gaps for recovery with cost effectiveness.
FOOD SAFETY AND HALAL FOODS
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Abstract
Islam permits the consumption of all nourishing, pure, wholesome and safe foods within certain limits as Allah “loveth not the prodigals”. The Holy Quran has provided basic guidelines for determining which foods could be eaten by man: the food must be lawful’ (halal) and ‘safe’ or ‘wholesome’ (tayyab). Such foods are palatable and nutritious and are devoid of any deleterious effects on the human body. Thus fruits, vegetables, cereals, legumes, herbs, spices, oilseeds, etc., are lawful. Besides, the meat and milk of all lawful animals is lawful. Fish also falls in the same category. The primary characteristics of the halal foods is “tayyab” or safety.
ENHANCED CLUSTERING BASED ROUTING PROTOCOL IN VANET
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Abstract
Vehicular ad-hoc Networks (VANET) is a network that is independent of any infrastructure due to which hosts themselves provide services. It includes the mobile nodes and vehicles nodes for communication among each other wirelessly or without any infrastructure. VANET is an application which is promising towards the improvement in comfort and security for the drivers, passengers and vehicles. It helps the vehicles to share information related to safety and analysis of traffic. VANET provides a system for the enhancement in traffic services and reducing the chances of road accidents. Clustering is a technique in which data is distributed into groups having identical objects. Secure clustering is required for the communication among the nodes in a network. This main problem of VANET is the instability of its network due to vehicles mobility which reduces the efficiency of network. This paper proposes an enhanced cluster-based-life-time protocol (CBLTR) that aims at improving the stability of routing and the average throughput. The cluster head is responsible for choosing next cluster head based on the routing table and for the communication among the clusters. In this paper Sugeno fuzzy inference system is used for selection of the Cluster head based on input parameters which includes concentration, local distance, residual energy, and distance of base station. Further for evaluating the performance of the enhanced proposed protocol, simulation is done using MATLAB and the results are discussed in relation to the average throughput.

Keywords
VANET, Clustering, Routing Protocol, Fuzzy Inference System, Cluster Head
PREVALENCE OF CYP19A1 POLYMORPHISM RS2414096 IN FEMALES AFFECTED WITH POLYCYSTIC OVARIAN SYNDROME IN PAKISTAN
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Abstract
The polycystic ovarian syndrome (PCOS), characterized by the presence of cystic masses in the ovaries, affects one in fifteen women worldwide. Affected women often exhibit several biochemical and clinical abnormalities like hyperandrogenaemia, anovulation, infertility, obesity, hirsutism, hyperinsulinemia, dyslipidemia and hypertension. The gene CYP19A1 encodes the enzyme aromatase which is responsible for maintaining balance between androgens. Many studies conducted throughout the world have indicated a strong correlation between PCOS and CYP19A1 polymorphism rs2414096 (G>A). There is no published report on the prevalence of this polymorphism in women of Pakistani origin, creating a void of information regarding this highly prevalent reproductive disorder from this part of the world. n=50 women diagnosed with PCOS according to the standard Rotterdam criteria and the same number of control women were recruited for the current study. Venous blood samples were collected in red cap vacutainers from all the study participants after 8-12 hours of fasting for lipid profile analysis and in purple cap vacutainers for DNA extraction followed by restriction fragment length polymorphism (RFLP). All the relevant clinical information as well as the anthropometric measurements were collected on a carefully designed questionnaire. The parameters of lipid profile (cholesterol, triglycerides and HDL) were analyzed using Crescent Diagnostics® kits on UV visible spectrophotometer SPECORD® 200 plus (Analytik Jena, Germany). RFLP analysis is being done using HinIII (NlaIII) restriction enzyme by overnight incubation at 37 °C. The restriction analysis by HinIII (NlaIII) reveals three bands of 189 bp, 161 bp and 28 bp for PCOS patients, two bands of 161 bp and 28 bp for carriers, and a single band of 189 bp for females do not have this polymorphism. All the clinical, anthropometric, and experimental data is being analyzed using IBM-SPSS version 25 (1989, 2017). This pioneering study will play a pivotal role in understanding the genetic predisposition and the risk of PCOS in females from Pakistan.

Keywords
Pcos, Cyp19a1, Polymorphism, Obesity, Lipid Profile
IRON EVALUATION IN FORTIFIED AND WHOLE WHEAT FLOUR COLLECTED FROM DIFFERENT AREAS OF PUNJAB

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Abstract
Wheat, necessary food ingredient for most of the world’s population, loses its minerals and vitamins during milling and processing. Fortification is commonly carried out to enhance the nutritional value of wheat. The present work is about the analysis of iron content in different fortified and whole wheat flour samples to determine and compare their nutritional values using a UV/VIS spectrophotometer. Two methods were employed for this study. First method involved the treatment of the digested samples with 1, 10-phenanthroline whereas the second method involved treatment with potassium thiocyanate. 1, 10-Phenanthroline reacted with Fe²⁺ and formed an orange-red complex whereas potassium thiocyanate reacted with Fe³⁺ and gave intensely red colored complex. Both methods were reliable and were found to be accurate protocols for the determination of iron content in wheat samples. The UV/VIS spectrophotometer was used for the analysis. The result of this investigation showed that whole wheat sample collected from Sargodha city contained highest amount of iron as compared to other whole wheat samples, even more than fortified flour samples.

Keywords
UV/VIS Spectrophotometer, Fortification, Wheat, Iron Complex
ASSOCIATION OF eNOS GENE INTRON 4VNTR (4a/b) POLYMORPHISM WITH ALBUMINURIA IN TYPE II DIABETIC PATIENTS

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Abstract
Endothelial nitric oxide system (eNOS) plays crucial role in vascular tone for many organs such as kidney, heart and endothelial function. Many experimental studies observed the association of eNOS gene polymorphisms as genetic risk factors with diabetic nephropathy in type II diabetic patients in different population and found varied results. The aim of this study was to find the association of eNOS gene polymorphism, intron 4VNTR (4a/b) caused by insertion or deletion of 27 nucleotide variable number tandem repeats in the region of intron 4, with diabetic nephropathy characterized by albuminuria in Pakistani population. Total sample size was 300 that comprised of 150 diabetic patients as cases having disease for more than 10 years and 150 healthy persons as control. DNA was extracted from blood by Phenol chloroform method and PCR amplification was performed for the detection of intron 4VNTR (4a/b) polymorphism after analyzing on 6% polyacrylamide gel electrophoresis. A single band of 393 bp shows the ‘aa’ genotype (four tandem repeats), 420bp shows ‘bb’ genotype (five tandem repeats) while presence of two bands of 393 and 420bp shows ‘ab’ genotype. A significant difference was observed between Height (p<0.05), Urinary Albumin Excretion and Albumin to Creatinine ratio (p<0.001) and non-significant difference was observed between age, duration of diabetes, weight, BMI, SBP, DBP, urinary creatinine (P>0.05) of Albuminuric and normoalbuminuric patients. The distribution of frequencies of genotypes and alleles in diabetic patients showed significant high prevalence of ‘bb’ genotype and ‘b’ allele as compared to control. Association of genotype in allele ‘a’ verses ‘b’ among controls and patients (p=0.002*OR;1.686 [95%CI;1.199-2.372] p<0.001) was observed as a risk associated with type II diabetes. None of the single genotype and allele showed risk association with albuminuric condition of diabetic nephropathy in type II diabetic patients (p>0.05). Thus, current research study has not shown the statistical significant association of eNOS intron 4VNTR (4a/b) polymorphism with diabetic nephropathy in Type II diabetic patients of Pakistan.

Keywords
Type II Diabetes, Diabetic Nephropathy, Albuminuria, endothelial Nitric oxide Polymorphism, eNOS intron 4 VNTR (4a/b)
DETERMINATION OF PHYTOCHEMICALS AND DNA DAMAGE PROTECTION ACTIVITY OF VARIOUS CANNABIS SEED EXTRACTS

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Abstract
Cannabis has been used from centuries as a neuroactive due to presence of variety of secondary metabolites. These secondary metabolites include alkaloids (cannabinoids), terpenes, flavonoids and lignans etc. These secondary metabolites have positive effects on human health and can be act as potential alternative sources of harmful chemotherapeutic agents due to their antioxidant activities. Free radicals are dangerous species that cause oxidative damage to DNA, proteins, lipids and hence destroy cellular membranes and may result in many degenerative disorders, aging processes and chronic diseases. Phenolic compounds like flavonoids can absorb these free radicals and protect cells from oxidative damage. The present study included the defattening of Cannabis sativa seeds with hexane and extraction of these defatted seeds with four solvents; methanol, acetone, isoamylalcohol and water. Each of the five extracts were subjected to phytochemical screening. Acetone extract showed the positive results for alkaloids, flavanoids, phelabatonins, proteins, tannins, terpenoids and carbohydrates rendering it the richest extract among all other extracts. While hexane extract contain very small amount of phytochemicals. Antioxidant activity of hexane, methanolic, isoamyl alcoholic, acetonic and water extracts was evaluated by conducting a DNA damage protection assay. pTZ57R was used as a template DNA. Acetonic extract of Cannabis seeds protected the DNA damaged by Fenton’s reagent even at lower concentrations. Heaxane extract have no protection activity while water extract itself proved damaging to the plasmid DNA.
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