



MESSAGE BY THE VICE CHANCELLOR

Welcome to Government College University Lahore, the leading educational institution in the Indo-Pak Subcontinent, where excellence is nurtured, pursued and celebrated since its inception in 1864. In its 155th year of existence this institution is cognisant of the national importance of enrolment in higher education while retaining its legacy by being supportive to social, academic and research community. Our university's values underpin our vision and mission, and are integral to guiding the implementation of our strategy towards teaching, learning and research. GCU pursues its mission with courage, innovation and pluralism.



We are committed to excellence in academics, research and knowledge exchange. The staff members of GCU demonstrate collegiality and teamwork which act as catalyst in student's lifelong learning.

GCU's academic and career opportunities are balanced with a campus lifestyle with an outstanding array of sports, cultural and social choices by getting membership of more than 50 societies and clubs. All of these elements i.e. teaching, scholarships, academic support, selection of programmes, co-curricular opportunities make GCU different from other institutions. We endeavour to achieve our goals through our distinctive approach in disseminating knowledge based on curriculum, Inter-disciplinary courses, the student experience, research, linkages with the industry and the community.

Through this ethos our students have been and are emerging leaders who have always helped in shaping tomorrow. Our Motto "Courage to Know" challenges both students and staff members to realize their potentials, help in identifying strengths and guide to acquire much needed lifelong learning skills for academic and social interaction.

We aspire to provide learning and teaching experience that harnesses the students to enhance their capabilities and transform their life for the better. Student satisfaction is a huge challenge and of great significance, which assures learner's level of success. The students are encouraged to develop skills which will help them in gaining meaningful employment, further their education or contribute more effectively to the society.

Generations of students, staff and alumni have added on to the repertoire of the Ravian flare, and I am confident that these graduates of today and tomorrow will keep on contributing to the glory of their Alma Mater. The exalted image of this esteemed institution will not only benefit the future students, but also the boundless global community which will be the recipient of gains from GCU's knowledge leadership.

Vice Chancellor



Welcome Message by Chairperson, Department of Zoology and Principal Organizer of IBPHR-2019

Dear participants of the 3rd IBPHR-2019, I cordially welcome you in this prestigious event organized by Department of Zoology, GC University, Lahore. GC University, Lahore has always been on the fore front in providing the forum for intellectual, scientific and social discussions which play a significant role in career and moral building of young generation. The long and illuminating history of GC University, Lahore alongwith it's endeavours for the bright future inspire students to reach new heights.

This conference has been organised with the vision to provide platform for the interaction and inspiration of young scholars with the experts of the biological sciences both nationally and internationally. Around, 135 abstracts will be presented in the conference in oral and poster presentations. Eminent foreign scientists, distinguished and renowned national scholars will also be joining us in this endeavours and we are hoping to have fruitful discussions. We are fortunate to have the support of a great cadre of sponsors, like Punjab Higher Education Commission (PHEC) and Pakistan Science Foundation (PSF).

I am very grateful for the determination, participation and efforts of the faculty and staff members of department of Zoology for organizing this conference. I hope the conference will be a productive and splendid experience for all of us.

Wish you a wonderful time at GC University, Lahore.

Prof. Dr. Atif Yaqub



GOVERNMENT COLLEGE UNIVERSITY, LAHORE



GCU Lahore is a modern, demand-driven, futuristic, quality conscious and affordable public university. The University wishes to build its future through internationally recognized research work, scholarship and learning within a distinctive scholarly environment. The University is committed to be a research led institution that values knowledge and learning for their own sake, as well as for the cultural, social and economic benefits it offers. The University has created an environment in which leading academicians engage their pupils in rigorous intellectual activity and focus increasingly on the “learner-centred” approach to education and the promotion of research activities. Our plans embrace three additional strategic directions: institutional collaboration, international links and open-learning to increase flexibility and interaction. The aim is to extend the University's reach and its capacity for research pursuits. GCU creating an environment in which academic excellence can be combined with opportunities for personal development, enabling individuals to make their own future. The GCU respect the academic freedom of all staff members and students. This, believe, is the best means of promoting creativity and generating innovative solutions to problems.

HISTORY

The Government College University, Lahore abbreviated to GCU), is a public university located in the downtown area of Lahore, Punjab, Pakistan. It is one of the oldest university in Pakistan as well as oldest institution of higher learning in the Muslim world. Government College Lahore or simply GCU, is synonymous with Lahore, it is among the first educational institutions that were established in the Punjab.



Generations of students have passed through its portals and attained eminent positions in all walks of life in Pakistan. Although the establishment of a Central College at Lahore was sanctioned in 1856 with the condition that the teachers should be graduates of Oxford, Cambridge, Dublin or Durham, it was not until January 1, 1864 that the college opened its doors in the palace (haveli) of Dhian Singh/Khushal Singh, in Lahore's Walled City. In April 1871 the college moved to a large Bungalow near Anarkali. In 1873 its location was changed to another house called Rahim Khan's Kothi. It was in 1876 that the college moved into the present building. The construction had started almost in mid 1872 and was completed in 1877. Situated in the heart of the city, the site is surrounded by main business and administrative areas, schools, colleges and Punjab University old Campus. Presently raised to the status of university, Government College University (GCU) site is located at the junction of the Mall and the Lower Mall and occupies a focal point. The first principal was the famous Dr. G. W. Leitner whose name is closely attached to the College. In April 1871 the college moved to a large Bungalow near Anarkali. When it was decided to move to more suitable premises, a site on an eminence north of the Soldier's Garden (Gol Bagh) was selected, and a 'picturesque building', with a large central clock tower was constructed. That Gothic was the chosen style for the building is not surprising. Among the first major structures of Lahore, the missionary zeal frequently expressed by the Lawrence brothers (Henry and John Lawrence) no doubt had an impact on the architectural expression of the college.



BUILDING

The building was completed in 1877 at a cost of Rs. 320,000. The main tower is the centre of the GCU main building is marked with an enormous entrance tower—a most impressive element representing the image of Government College. Placed on a 15' high podium, and accessible from the garden by a wide flight of stairs, the tower rises to a total height of 176' divided into four distinct storeys, it is terminated in the form of a spire. The battered sides of the octagonal tower carry quaint dormer windows, with its enormous clocks visible from great distances. The classrooms are accessed from a deep verandah which also provides protection from the strong Punjab sun.

"Oval Ground" of the University Campus

Oval Ground is the place where Ravians sit, relax, talk, study, discuss, analyze, ponder, and even muse and meditate. Here they make new contacts and explore new ways to manifest their liking for the unknown. The Oval offers them with opportunities to display the dynamic talents they possess. The most prominent part of the building is the Main Hall (now called Dr. Abdus Salam Hall). It consists of a central nave and aisles running along the 4 sides. The nave is of double height. The 4 aisles are double storeyed and they form a gallery on the upper floor. The main entrance to the hall is through a porch on the West side. Another entrance on the South, faces the Oval ground. This is an arched opening with grand and traditionally carved wooden door. After entering through this magical opening, a passage leads into the hall. Inside the hall, where the aisles cross each other at corners, big rooms have been provided. The hall is a wonderful example of composed mannerism that depicts harmony, symmetry and balance. The main conical-type clock tower at the facade is square at the base. The first two storeys are square and a squinch arch is placed to convert the square plan into octagon. The first two storeys are followed by two storeys of octagonal plan with arched openings and triangular projections.



QUALITY TEACHING & RESEARCH

GC University, Lahore has played a truly pioneering role in promoting research and inquiry in the country, particularly in the disciplines of Physical and Biological sciences. The university has a reputation of Academic excellence based on an impressive record of achievement in teaching and research. The research carried out by GCU scholars in various departments has been acknowledged internationally. The University has produced two Nobel Laureates: Dr. Hargobind Khorana (in the field of Chemistry) and Dr. Abdul Salam (in the field of Physics).



Dr. Hargobind Khorana



Dr. Abdul Salam

ACADEMICS

The University offers B.A/B.Sc. (4-year Hon.), M.A, M.Sc. (in some selected disciplines), M.B.A., M.Phil, and PhD programmes in all major disciplines. The University also take steps to sensitize our students about the meaning of the University Motto: "Courage to Know." We try to make the students inquisitive, thoughtful and independent in pursuit of knowledge. Special measures are taken through discussions, co-curricular activities, writing of term papers and dissertations to make the learners confident in their understanding of innovative themes and topics. Every student is thus brought into the mainstream of the grand academic culture of the GC University. During their stay, the students are bound to benefit from the academic, intellectual and cultural environment of this celebrated educational institution.

SPORTS

The sports history of GC University can be traced from the 1931-32 session when GC became the overall champion and won the general trophy of the Punjab University for the first time. GCU is one of the finest sports nurseries for producing and grooming sportsmen for National teams, and has been maintaining its tradition of excellence in sports and has produced hundreds of international sportsmen who represented Pakistan with distinction in Olympic Game/Asian Games / SAF Games and other International Sports Events since 1947.



After getting the status of University in 2002 the GCU leadership started revamping the sports activities on higher level and re-established the Sports & Physical Education Department. A new post "Director of Sports and Physical Education" was created and a Director was selected in July 2004. GC University has kept on healthy tradition of excellence in the field of sports and takes pride in maintaining the high standards in every field of sports activities. GCU always play for the glory of sports and has the privilege to participate in all games organized by Lahore Board, HEC Sports Competition with distinction.

OLD RAVIANS UNION

The alumni of university are called "Ravians" due to universities magazine called "Ravi". Old Ravians Union Pakistan is an elected body of former students of GC University, Lahore (previously known Government College Lahore). The Union was established in 1934 and revived in 1995. It is



the only organization of Old Ravians which has affiliation of the GC University, Lahore and its office is situated in the Campus. Constitutionally, Vice Chancellor of the GCU, is ex-officio patron of the Union. Mr. Kamran Lashari, Ex – Federal Secretary, Govt. of Pakistan & Ex - Chairman CDA is President of the Union. All Old Ravians are eligible to apply for membership of the Union. Elections of its various offices take place biennially in the GCU Campus. However, next elections will be held in November 2014. The Union arrange intellectual, social, cultural and sports events where Old Ravians meet and interact. The Union work to assist and help the University in different fields. It is also an instrumental for collection of funds from the Old Ravians for GCU Endowment Fund Trust which is used to provide financial aid to deserving students and for development of the University. The Union has its affiliated chapters in Karachi, Islamabad, India, UK, US and Canada. The spirit of Lahore sustained throughout the history of Government College University (GCU). Almost all the great intelligentsia who have richly contributed to the academic, literary and cultural life of the city, some how or other, shares a sense of belonging to GCU. Mohammad Hussain Azad and Allama Mohammad Iqbal are just two to mention.

THE DEPARTMENT OF ZOOLOGY, GC UNIVERSITY, LAHORE, PAKISTAN

The Department of Zoology, GC University, Lahore is the oldest seat of learning and imparting knowledge of Zoology at the Graduate and Postgraduate level in Pakistan. The Postgraduate Programme at the department was launched in 1908. In addition, it was the first centre to start teaching Zoology in this part of the Subcontinent until 1920 when the University of the Punjab, Lahor established its Department of Zoology. The Zoology Department of the University of the Punjab, Lahore was also housed in the building of the Department of Zoology at the Government College Lahore and continued functioning here till 1963. During these years, the Zoology faculties of Government College Lahore and the University of the Punjab jointly managed the Postgraduate Programme.

In 1963, the Department of Zoology initiated its independent M.Sc. Zoology Programme as a result of the untiring efforts of Dr. Nazir Ahmad (who had been promoted to Principal, Government College Lahore), Prof. Naseer-ud-Din Ahmad (Professor and Chairperson, Department of Zoology) and Dr. Ahsanul Islam (Professor of Zoology).

After attaining the status of an autonomous institution in 1997, and that of a University in 2002, curricula were upgraded and modernized in accordance with international standards.

Stephenson Natural History Museum

The Department of Zoology has one of Asia's oldest natural history museum; the Stephenson Natural History Museum, established by Dr. Lt. Col. Stephenson in 1906. It has more than 5,000 preserved specimens. This museum is used for teaching and research purposes at various levels.

Research Groups

The Department has an experienced faculty actively involved in research activities and has also established the following Research Groups:

- Wild Life and Ecology
- Fisheries and Aquatic toxicology
- Medical Entomology
- Microbiology
- Immunology
- Molecular Biology
- Human Genetics
- Cancer Biology
- Physiology

Research Journal

We recognize the responsibilities that come with research development and publication. Department of Zoology take great pride in publishing Journal entitled "*BIOLOGIA (PAKISTAN)*" available at www.biosoc.pk. The journal has gained popularity in



the biological research circle since it is available online and the journal visibility has increased the citation number of the articles. The process of blind reviewing the manuscripts had increased the credibility of the journal. The articles published in this peer reviewed Journal help to manage and address important issues in various disciplines of science such as Parasitology, Microbiology, Molecular Biology, Medical Entomology, Palaeontology etc. The journal is in category “Y” of HEC recognized local science journals.

Research Laboratories

There are three general laboratories for Intermediate and under/Postgraduate students. In addition, there are six research laboratories for conducting research at the Postgraduate level. The department has established a Cell and Tissue Culture Laboratory which is fully equipped for the culturing of various cell lines. In this laboratory a project is going on for controlling the endemic dengue disease and to meet the challenges in controlling the dengue vector. The Department has procured modern sophisticated apparatus like fluorescent and inverted microscopes with photographic attachment, CO₂ controlled Incubator for tissue culturing, Cryostat, Ultracentrifuge, PCR and Gel Documentation system and Gene Manipulator for advanced research activities.

Animal Maintenance and Rearing Facilities

The Department has an Insectary, a Forgery, a Fish Farm, a Rabbit House and a Mouse House for conducting experiments on various animals.

Academic Links

The department of zoology has established several links with international and national organizations.

The department of Zoology has active collaboration with University of Nottingham, UK in terms of research activities. The department has signed another MOU with University of Guelph, Canada for research activities and other collaborative activities.

On the national level the department is dynamically collaborating with several agencies. The MOUs have been signed with Pakistan Museum of Natural History, Islamabad, Punjab Fisheries department and Veterinary Research Institute, Lahore.

Future Prospects

Degree holders are usually absorbed in the market as Lecturers, Medical Representatives and researchers at research organizations. They also get jobs at fisheries, wildlife and public health departments, etc.



THE MAGNIFICENT LAHORE

Lahore is the second largest city of Pakistan and the provincial capital of the Punjab. Historically, it is believed to be about 2000 years old. In ancient times, it was an outpost of Kangra hill Kingdoms and was a cut-off township on the trade route to Delhi. It had hardly any reputation in the Pre-Muslim era. Lahore came to eminence with Islam in South Asia.

History

Lahore has always been a seat of learning and knowledge. Sufism and speculative mysticism became its major discipline. Schools were opened and scholars from Baghdad, Iran and other oriental and occidental regions came to this historical city and settled here. The city flourished academically during the four centuries of the Delhi Sultanate. It became the second imperial capital in 1580 under the Mughal Emperor Akbar the Great. Lahore touched the peak of glory during the rule of the Mughals. The Mughal emperors beautified the city with some of the finest architectural buildings and gardens that have survived the hazards of time. It was this reputation of Lahore that fascinated the English poet John Milton who wrote in 1670: "Agra and Lahore, the Seat of great Mughal." In earlier 17th century, Lahore was the pole-star and trend-setter for all the cities of the Empire. In mid 17th century, there were more than ten thousand schools in the city.

Literary education and poetry were the distinction of the city during the reigns of Mughal Emperors Shahjahan and Aurangzeb. The reputation of the city continued even during the anarchy of 18th century and it remained to be remembered as the Mughal capital even under the Sikh rule (1780-1846).

During the British rule in the Sub-Continent, many impressive buildings were raised in Lahore, which blended beautifully the traditional Mughal with the Western Gothic and Victorian styles of architecture. The British, who occupied the Punjab in 1849, had practically revived the old view of Lahore. Thus when they founded Government College Lahore (Now G.C. University) in 1864 they did not ignore Lahore's academic background. They selected Dr. G.W. Leitner as its first Principal who was an Arabic scholar and had studied Islamic learning at Constantinople (Istanbul) in Turkey. It was Dr. Leitner who had managed the building of a mosque at Woking in England after his retirement.

Language

As per the 1998 census of Pakistan, Punjabi language is spoken by 87% of the population. Lahore being the capital of the province of Punjab exhibits a great variety of Punjabi dialects spoken by the people of different district's living in the city. Urdu being the national language is spoken and understood. English is also understood and spoken by a sizeable segment of the educated population. Minority Languages spoken by people of different parts of Pakistan and Afghan refugees living in Lahore (Pahari, Raangri, Mewati, Pashto, Sindhi, Baluchi, Brahvi, Wakhi Tajik, Kashmiri, Shina, Balti, Khower, Burshiski and Dari).

Geography and climate

Lying between 31°15'—31°45' N and 74°01'—74°39' E, Lahore is bounded on the north and west by the Sheikhpura District, on the east by Wagah, and on the south by Kasur District. The Ravi River flows on the northern side of Lahore. Lahore city covers a total land area of 404 square kilometres (156 sq mi) and is still growing. Lahore features a five season semi-arid climate (Köppen climate classification *BSh*) (from another source: Composite monsoon climate) with five seasons Foggy Winters (Nov – Feb) with few western disturbance causing rains, Pleasant Spring (Feb – April), Summer (April – June) with Dustrain storms and Heatwave periods, Rainy monsoon (July-September) and Dry but pleasant autumn (September – November).



Transportation

Lahore is one of Pakistan's most accessible cities and the only city in the country where one can find public and private transportation 24 hours a day and 7 days a week. This includes public buses, as well as thousands of rickshaws and taxis.



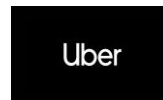
Allama Iqbal International Airport



Lahore Railway Station



Lahore Metro Bus



Taxi Services

Population

According to the 2017 census, Lahore's population was 11.13 million, making it the second largest city in Pakistan after Karachi. It is considered to be one of the 30 largest cities of the world.

Religion

94% of Lahore's population is Sunni or Shia Muslim, up from 60% in 1941. Other religions include Christians (5.80% of the total population, though they form around 9.0% of the rural population), and a small number of Bahá'ís, Hindus, Ahmediya, Parsis, and Sikhs.

Culture

The people of Lahore celebrate many festivals and events throughout the year, blending Mughal, Western, and other traditions. Eid ul-Fitr and Eid ul-Adha are celebrated. Many people decorate their houses and light candles to illuminate the streets and houses during public holidays; roads and businesses may be lit for days.

Cuisine

Lahoris are known for their love of food and eating. While Lahore has a great many traditional and modern restaurants, in recent years Western fast food chains, such as McDonald's, Pizza Hut, Domino's Pizza, Subway Sandwiches, Dunkin' Donuts, Nando's, Kentucky Fried Chicken and Hardee's have appeared all over the city. Recently the food streets in the historic locales of Lahore (Gawalmandi, Anarkali, and Fort Road) have attracted tourists. Food streets have undergone restorations and are cordoned off in the evenings for pedestrian traffic only; numerous cafés serve local delicacies under the lights and balconies of restored havelis (traditional residential dwellings).

Some of the trendiest restaurants in Lahore are concentrated on the M M Alam Road in Gulberg. Here, dozens of high-class culinary outlets, ranging from Western franchises to traditional, ethnic, or theme restaurants, attract all classes of Lahore's citizens.



Historical places and gardens

Lahore is an ancient city with more than 200 archaeological sites and historic places. The city is hub of art and culture in the country. Lahore has also been rated by the British newspaper 'Guardian' as the 2nd best tourist destination in Pakistan in 2008. Lahore has 2 UNESCO World Heritage Sites and plenty of national monuments. Every nook and corner of old Lahore is full of mysterious history and never-ending charm that attracts thousands of visitors locally and internationally. A visitor who happens to be in Lahore for the first time, sums up his/her experience in one line that is *Lahore is Lahore*.



Badshahi Mosque



Shalamar Garden

Alongwith many historical landmarks Lahore is also known as the City of Gardens. Many gardens were built in Lahore during the Mughal era, some of which still survive. Gardens and parks in the city include Hazuri Bagh, Iqbal Park, Mochi Bagh, Gulshan Iqbal Park, Model Town Park, Race Course Park, Nasir Bagh Lahore, Jallo Park, Wild Life Park, and Changa Manga, an artificial forest near Lahore in the Kasur district. Another example is the Bagh-e-Jinnah, a 141-acre (57 ha) botanical garden that houses entertainment and sports facilities as well as a library.



Lahore Museum



Greater Iqbal Park



Health care

Lahore has a number of hospitals, including Shaukat Khanum Memorial Cancer Hospital, Mayo Hospital, Hamid Latif Hospital, Nawaz Sharif Social Security Hospital, Lahore General Hospital, Jinnah Hospital, Gulab Devi Hospital, Sir Ganga Ram Hospital, Sheikh Zaid Hospital, Fatima Memorial Hospital Shadman Lahore, Ittefaq Hospital, Punjab Institute of Cardiology and Sharif Medical Complex. The current government of Punjab has a comprehensive plan to establish new hospitals and medical colleges in the city.



Shaukat Khanum Hospital



Jinnah Hospital

Education

Lahore is known as Pakistan's educational capital, with more colleges and universities than any other city in Pakistan. Lahore is Pakistan's largest producer of professionals in the fields of science, technology, IT, engineering, medicine, nuclear sciences, pharmacology, telecommunication, biotechnology microelectronics, nanotechnology and the only future hyper high tech centre of Pakistan. Most of the reputable universities are public, but in recent years there has also been an upsurge in the number of private universities. The current literacy rate of Lahore is 74%.



Government College University



King Edward Medical University

Arts and media

Lahore is at the core of Pakistan's media and arts scene. Pakistan's most prestigious art college, National College of Arts, is located here. the country's most prestigious fashion school, the Pakistan School of Fashion Design, which has some of the best photo studios and photographers in the country. The *Pakistan Fashion Design Council*, also successfully organised the Lahore Fashion Week 2010 as well as the PFDC Sunsilk Fashion Week Lahore 2011. Lahore has also been home to Pakistan's old classical music, ghazals and Qawwalis, with big names such as Noor Jehan, Arif Lohar, Nusrat Fateh Ali Khan, Mehdi Hassan and Ghulam Ali residing in the city. In recent years Lahore has produced some of Pakistan's greatest pop singers, such as Ali Azmat, Atif Aslam and Ali Zafar.

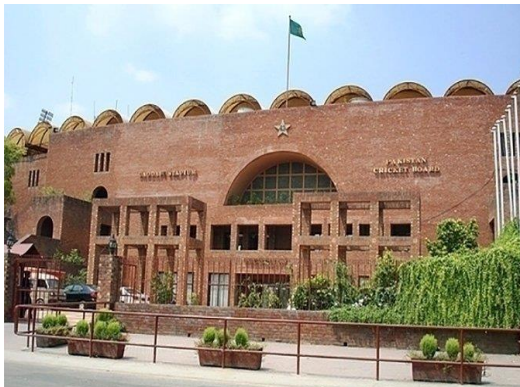


Alhamrah Art Galleries

Sports

Lahore is home of sports in Pakistan. It has many world class sports venues and stadiums. Lahore has successfully hosted many international sports events including final of the 1990 Hockey World Cup and final of the 1996 Cricket World Cup. The headquarters of all major sports governing bodies are located here in Lahore including Cricket, Hockey, Rugby, Football etc. and also has the head office of Pakistan Olympic Association.

Sports Stadiums in Lahore



Hotels in Lahore

Hotels in Lahore have started gaining significance nationally and internationally. Lahore has become a cosmopolitan city, where many races and nationality live together peacefully along with Lahoris. We can find, British, Indians, Americans and many other tourists from time to time from other countries. At the same time Lahore being a major industrial and business centre, you can always find lots of visitors from other parts of Pakistan like Karachi, Faisalabad, Islamabad, Multan and many more cities.

1 - Pearl Continental Hotel – Lahore

The best in hotels in Lahore ranks the PC Lahore which is always improving

Star Rating: 5

Location: Mall Road, Lahore

Contact Info:

Tel:+92(42) 3636-0210, 111-505-505 Fax:+92(42) 3636-2760, 3636-4362

Email:pchl@hashoogroup.com

Shahrah-e-Quaid-e-Azam P.O.Box#983,Lahore



2 - Avari Hotel Lahore

The second in line of hotels in Lahore is without doubt Avari Hotel Lahore.

Star rating: 5

Location: Mall Road, Lahore

Contact Info:

Tel: (92-42) 3-6366366

UAN: 111 AVARIS (111 282 747 Toll-Free: 0800-88888

Fax: (92-42) 3-6365367 E-mail: lahore@avari.com

87 Shahrah-e-Quaid-e-Azam, Lahore 54000, Pakistan

3 - Hospitality Inn Lahore

Star Rating: 4

Location: Egerton Road, Lahore

Total Room: 120

Contact Info:

25-26 Egerton Road, Lahore.

4 - Ambassador Hotel Lahore

Star Rating: 3

Location: Davis Road, Lahore

Contact Info:

7 Davis Road, Shimla Hill, Lahore

Phone: +92-42-36316820

Fax +92-42-36301868.

5 – Smart Hotel Lahore

Star Rating: 3

Location: Liberty Market Lahore

Contact Info:

36 Liberty Market Gulberg III, Lahore, 54600

Phone +92-42- 3578-4411

Fax +92-42- 3571-2800

E-mail : info@smarthotellahore.com

6 - Hotel Sunfort Lahore

Star Rating: 3

Location: Gulberg, Lahore

Total Rooms:

Contact Info:

72-D/1, Liberty Commercial Zone, Gulberg-III, Lahore, Pakistan.

Tel: +92 42 576 3810 - 19 Fax: +92 42 575 4277

E-mail: info@sunforhotel.com

7 - Amer Hotel Lahore

(Hotels in Lahore)

Star Rating: 3

Location: Lower Mall Road, Lahore

Contact Info:

46- Lower Mall, Lhr

Email: info@amerhotel.com.pk

Tel: +(92-42) 3711 5015 – 18

Fax: +(92-42) 3711 3424



8 - Maisonette Luxury Suites Lahore

Star Rating: 3

Location: Ghalib Road, Gulberg, Lahore

Contact Info

51-C-2, GulbergIII,Lahore

Phone:+92 321 6804298

9 - Leaders Inn Lahore

Star Rating: 3

Location: Montgomery Road, Lahore

Contact Info:

6-Montgomery Road, Behind Punjab Assembly, Lhr

Phone:+92 321 6804298

10 - Hotel Crown Plaza Lahore

Star Rating: 4

Location: Upper Mall, Lahore

Contact Info:

2- Upper Mall Scheme, Lahore, Pakistan.

Phone: 0092- 42- 111- 808- 111

Fax: 0092- 42- 35760978

E-mail Id: info@crownplazalahore.com

GENERAL INFORMATION FOR PARTICIPANTS

IBPHR registration and information centre

The registration desk will be located at entrance of Bukhari Auditorium and Zoology department at the following hours:

Wednesday, November 13th: from 08.00 a.m. to 1.00 p.m.

Thursday, November 14th: from 08.00 a.m. to 1.00 p.m.

The conference inquiries concerning the program can be obtained at the information desk.

Refreshment

The refreshment includes morning, afternoon teas and lunch on both days. Dinner and cultural event will be on the first day of the event.

Refreshment venues are Bukhari lawns.

First aid and medical emergency

Medical facility is provided to the participants by University Medical Officer and their staff. The clinic is located in the Student Service Centre. Special Ambulance Service is also available round the clock.

Cafeterias

The University has two well-furnished Cafeterias on Campus. Here the students eat and chat to get refreshed. A committee that ensures quality food items supervises the Cafeterias Food items are supplied to the students at reasonable and affordable rates. The Girls Cafeteria is located in the building of Student Service Centre (Ground Floor) adjacent to the main cafeteria.



Mosque

In order to facilitate Islamic Teaching and the observance of the five obligatory prayers, there is a mosque situated at the University campus. In the mosque there are facilities for daily as well as for Friday prayers.

Awards & Honours

The souvenirs and certificates will be distributed by the chief guest to plenary and invited speakers, poster competition winners and conference organisers.

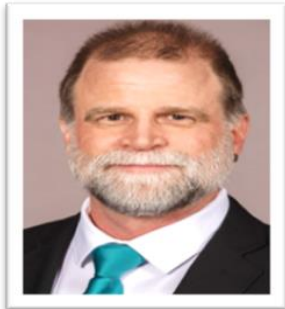


PLENARY LECTURES

SPEAKERS



Prof. Dr. Johannes A. Schmid



Prof. Dr. Michael J. Carvan III



Prof. Dr. Abdul Rauf Shakoori



Prof. Dr. Nadeem Sheikh



Plenary Lecture I

Molecular and cellular links between inflammation, cancer and cardiovascular diseases

Prof. Dr. Johannes A. Schmid

johannes.schmid@meduniwien.ac.at

Institute for Vascular Biology and Thrombosis Research; Center for Physiology and Pharmacology,
Medical University of Vienna, Austria

ABSTRACT:

Inflammation is a physiological response of the organism to all different types of stress or threats, such as pathogens or physical injuries, which are perceived by a plethora of receptors on the cell surface or within the cells. Basically, all these sensors transmit signals that activate the key inflammatory transcription factor NF- κ B, which is then changing the cellular programme in a way that the individual cell as well as the whole organism can cope with the stress or defend itself against the threat. However, this physiological programme can turn into a pathological mechanism under certain circumstances. One of these is the detrimental link between inflammation and cancer, which can be explained at least in part by the fact that NF- κ B induces the transcription of anti-apoptotic genes. While this helps the cells to survive situations of stress, it also provides a survival advantage to transformed cells, which lost important tumor suppressor genes or gained increased expression of oncogenes due to stochastically occurring mutations. Furthermore, inflammation itself can trigger mutations, because reactive oxygen species, which are produced in the course of immune defense, can cause DNA damage. Apart from the link between inflammation and cancer, there is also a strong connection between immune defense and blood coagulation. This arose during evolution, because injuries required an efficient sealing of damaged blood vessels in parallel to an immediate activation of inflammatory defense mechanisms to cope with invading pathogens. Yet, the disadvantageous consequence of this functional link is that inflammatory conditions increase the tendency of thrombotic events – the pathological form of intravascular blot clotting. This is particularly relevant for chronic inflammatory states, which steadily increase in modern civilizations in parallel with the longer life expectancy. An important example is atherosclerosis, which is now understood as chronic inflammation of blood vessels and which is finally driving life-threatening cardiovascular diseases such as myocardial infarction or stroke. In our research, we try to understand these complex interconnections between inflammation, cancer and thrombotic diseases. To that end, we established various transgenic mouse models, which we complement with clinical data in the framework of a special national research network. This joint effort elucidated already interesting links between inflammation and atherosclerosis, as well as feedback mechanisms of the organism to counteract the pathological processes.



Plenary Lecture II

Environment-epigenome interactions and the potential for transgenerational inheritance of disease and dysfunction

Prof. Dr. Michael J. Carvan III

carvanmj@uwm.edu

School of Freshwater Sciences, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin, USA.

ABSTRACT:

Epigenetic modification of DNA and DNA-associated proteins regulates the activity of specific genomic regions, turning them “on” or “off” regulating expression. The collective epigenetic state of a cell incorporates multiple chemical modifications including DNA methylation, histone modification, and non-coding RNAs across the entire genome—called the epigenome. The epigenome determines cellular type, differentiation, and function, and is regulated by environmental stimuli such as morphogens, inflammation, endocrine/exocrine factors, and environmental stressors. Changes in the epigenome are heritable through mitosis and meiosis and can be passed to offspring resulting in intergenerational or multigenerational effects. If the inheritance goes beyond any generation that was exposed to the original stimulus (generally F3 or later), then it is considered to be transgenerational. Transgenerational inheritance has been observed in numerous plant and animal species, including humans, and should be considered as an adaptive response. Unfortunately, there are phenotypes in the later generations that can be considered maladaptive and increase susceptibility to disease and dysfunction. The causative mechanism for these phenotypes is not known. Concurrent changes in the epigenome are often detected, if they are examined, but cause and effect relationships have not been established between specific phenotypes and specific epigenetic changes. Newer technology and experimental approaches will be developed to make causative linkages between phenotype and epigenetic change. Regulatory agencies involved with public health, ecological services and sustainability, and protection of endangered or threatened species and habitats must begin to consider the potential transgenerational impacts of environmental stressors in the context of risk assessment if they are to adequately protect human and ecosystem health in the future.



Plenary Lecture III

Conventional and non-conventional markers and regulators in Epithelial-Mesenchymal Transition: Effect of high concentrations of metformin chloride

Prof. Dr. Abdul Rauf Shakoori

arshaksbs@yahoo.com

School of Biological Sciences, University of the Punjab, Quaid-i-Azam Campus, Lahore

ABSTRACT:

Metformin is the first line anti diabetic drug but in recent decade it has also emerged as an antitumor drug, used both independently and in conjugation with other drugs. Recent studies have shown that it targets different signaling molecules to induce apoptosis in cancer cells of which AKT, Stat3 and AMPK are well studied pathways. In the last couple of decades it has been observed that diabetic patients taking metformin have very less chances of death due to metastasis and now a days many clinical studies prove that metformin inhibits cancer metastasis by inhibiting many protein molecules involved in epithelial to mesenchymal transition or EMT which is the key to cancer metastasis. These molecules include some which have great structural importance like E-cadherin, β -catenin and also have regulatory role to play in cancer cell migration and metastasis like TGF β , Snail and ZEB. There are several studies which focus on the conventional molecules and there are only a few which deal with unconventional EMT regulators. Our study is focused on unconventional molecules including Stat3-leptin-G9a pathway along with non-calcium dependent Ig like cell adhesion molecules ECAM and NCAM. We have studied the cytotoxic and apoptotic potential of metformin in two breast cancer cell lines MDA-MB231, MCF7, one colon cancer cell line HCT-116 and one glioblastoma cell line SF767 along with Human umbilical cord derived stem cells HUCSCs. Effect of metformin on cell polarity and migration potential has also been studied by actin cytoskeleton staining. Some unconventional markers of EMT like calcium independent Ig like cell adhesion molecules ECAM and NCAM have also been studied along with Integrin α 5, β 1 and β 6 subunits which give a broad spectrum view on metformin's potential as anti-metastatic drug. Glucose starvation is long being studied for its potential to control cancer metastasis and so are the drugs, interfering the glucose metabolism or glucose uptake. It has been observed that patient undertaking metformin chloride have very low mortality rate due to cancer metastasis. Our study mainly focuses on its effect on epithelial to mesenchymal transition gene markers and inducers in various cancer cell lines and for that different nontoxic concentrations of this drug were selected to study its effect on cancer cell attachment and detachment. In our study we found that usual lower concentration are not only less effective *in Vitro* model than compared to higher dosages but also increase cancer proliferation and metastatic markers.



Plenary Lecture IV

Informatics, Public Health and Pakistan; Effective utilization of technology to cut down the expense and improve the quality.

Prof. Dr. Nadeem Sheikh

s_nadeem77@yahoo.com

Department of Zoology, University of the Punjab, Q-A Campus, Lahore, 54590.

ABSTRACT:

Information technology (IT) has brought revolutions in daily life of any person inhabiting the globe, turning a globe to global village. Ability to gather and store data in huge data bases has provided the foundations and ideas that “impossible can be made possible”. Public health is primary responsibility of “State” to provide quality healthcare services to their people. Success of any State policy depends upon the reliable data available to the State from reliable sources. Ready access to this data is essential to support decision-making in patient care planning and delivery. Public health informatics (PHI), fundamental to achieve this, is currently limited in many low and middle income countries including Pakistan, reflecting the lack of prioritization of this issue and many barriers to its successful implementation. Compiled data and access to data regarding public health can be used to improve healthcare on a larger scale. PHI is helpful for all stake holders of health care system e.g. Doctors can look for trends in disease management, drug efficacy, and other factors within their own patient population, researchers can use very same data for broader application, policy makers can use this information to set the future direction in terms of health care facilities, patients can have all the personal history just a single click away. Many countries with highly developed health systems are investing heavily in Health Informatics with the expectation of higher quality for lower costs as well as to cut down the cost of prescriptions. In Pakistan, despite of the fact that country stepped in the informatics era decades ago, however, the effective utilization of data and data bases is still not at its full swing. There is a need of time to make policy and take initiative of developing, implementing, inculcating and educating the people how effective the PHI can be for themselves, their doctors and above all for the country.



INVITED LECTURES

SPEAKERS



Prof. Dr. Akram Shah



**Prof. Dr. Muhammad
Usman Rashid**



Prof. Dr. Naeem T. Narejo



**Prof. Dr. Anjum Nasim
Sabri**



**Prof. Dr. Muhammad
Arshad**



**Prof. Dr. Muhammad
Akhtar**



Prof. Dr. Nusrat Jahan



Prof. Dr. Muhammad Ayub



Invited Lecture I

Cutaneous Leishmaniasis Aggravation in Gestation: Impact of Different Serum Samples on Leishmania Biology

Prof. Dr. Akram Shah

akram_shah@upesh.edu.pk

Principal Investigator Leishmaniasis Research Laboratory, and Chairman, Department of Zoology, University of Peshawar, Pakistan

ABSTRACT:

Leishmania tropica is causative agent in majority of Cutaneous leishmaniasis (CL) in Khyber Pakhtunkhwa province of Pakistan. The bordering areas along Afghanistan have has dramatic spread in the country and if the preventive measures are not taken, it will become serious public health problem in Pakistan. So a summary regarding present epidemiological position of CL in some areas of Khyber Pakhtunkhwa will also be discussed. The knowledge about mechanisms of pathogenesis or host defense caused by these parasites is limited and very little is known about the impact of pregnancy on cutaneous leishmaniasis. What is clear from the existing literature that these parasites encourage persistent inflammatory-anti-inflammatory responses, which appears to contribute to exacerbation of the disease, rather than therapeutic. So our current research is directed towards identification of the immunological mechanisms resulting in exacerbation of cutaneous leishmaniasis in pregnant women. Pregnancy has been associated with a shift in the Th1/Th2 balance; pregnant women exhibit reduced type 1 responsiveness that is considered to be important for the cure of leishmaniasis. The kinetic of arginase and L-arginine levels during and after pregnancy and the immunological mechanisms responsible for aggravated disease in pregnant women is also determined. Serum is the most important and expensive constituent in growth medium, we also explored effect of normal, heat Inactivated and cutaneous Leishmaniasis patient's sera on the growth of log-phase procyclic and stationary phase metacyclic *Leishmania tropica* promastigotes in vitro with promising findings. As can be perceived from our studies, raised intensities of arginase activity were observed in female having pregnancy ($45.15 \pm 3.7 \text{ ng/mL}$), non-expecting female with cutaneous leishmaniasis and expressively higher intensities of arginase activity ($95.30 \pm 4.2 \text{ ng/mL}$) in pregnant women with cutaneous leishmaniasis as compared to healthy non pregnant women ($35.15 \pm 2.2 \text{ ng/mL}$). Ultrasonography performed for all the subjects showed normal results. There was no effect of cutaneous leishmaniasis on the organs scanned. There were single live intrauterine fetuses, in cephalic presentation, with sonographic gestational age of 30-32 weeks, which matched with the menstrual cycle regulation. Fortunately no gross focal abnormalities were observed and amniotic fluid index was normal for gestational age of the fetus in all the expecting mothers. Interestingly in all subjects complete blood count, liver functions test, serum biochemistry and renal functions test results were within normal parameters with no hypo-albuminemia or hyper-globulinemia characteristic of canine *L. infantum* septicity.



Invited Lecture II

Prevalence and Spectrum of *MLH1*, *MSH2*, and *MSH6* Pathogenic Germline Variants in Pakistani Colorectal Cancer Patients

Prof. Dr. Muhammad Usman Rashid

usmanr@skm.org.pk

Basic Sciences Research, Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH&RC), Lahore, Pakistan.

ABSTRACT:

Pathogenic germline variants in *MLH1*, *MSH2* and *MSH6* genes account for the majority of Lynch syndrome (LS). In this first report from Pakistan, we investigated the prevalence of pathogenic *MLH1/MSH2/MSH6* variants in colorectal cancer (CRC) patients. Consecutive cases (n=212) were recruited at the Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH&RC), between November 2007 to March 2011. Patients with a family history of >3 or 2 HNPCC-associated cancers were classified as HNPCC (n=9) or suspected-HNPCC (n=20), respectively (group 1; n=29). Cases with no family history were designated as non-HNPCC (group 2; n=183). *MLH1/MSH2/MSH6* genes were comprehensively screened in group 1. Pathogenic/likely pathogenic variants identified in group 1 were subsequently evaluated in group 2. Seven distinct pathogenic/likely pathogenic *MLH1/MSH2* variants were found in group 1 (10/29; 34.5%), belonging to HNPCC (5/9; 55.6%) and suspected-HNPCC (5/20; 25%) families. Screening for these variants in group 2 revealed two additional patients harboring pathogenic *MLH1/MSH2* variants (2/183; 1.1%). Overall, three recurrent variants accounted for 58.3% (7/12) of all families harboring pathogenic/likely pathogenic *MLH1/MSH2* variants. Pathogenic *MSH6* variants were not detected. Pathogenic/likely pathogenic *MLH1/MSH2* variants account for a substantial proportion of CRC patients with HNPCC/suspected-HNPCC in Pakistan. Our findings suggest that HNPCC/suspected-HNPCC families should be tested for these recurrent variants prior to comprehensive gene screening in this population.



Invited Lecture III

Environmental Impact of Water Quality on Fish Production in Haleji Lake, District Thatta, Sindh, Pakistan

Prof. Dr. Naeem T. Narejo

naeem.tariq@usindh.edu.pk

Department of Freshwater Biology and Fisheries, University of Sindh, Jamshoro, Pakistan.

ABSTRACT:

The present studies to investigate the environmental impact of water quality on fish production in Haleji Lake, District Thatta, Sindh, Pakistan. During November 2017 to January 2018 the physicochemical parameter like temperature, pH, dissolved oxygen, Chloride, conductivity, salinity, and total dissolved solids were recorded fortnightly at 8:0AM in each sampling date through -out the study period. In the present study the temperature values were ranged between (20- 23C with mean 22 ± 1.0), pH (7.3-7.9 with mean 7.62 ± 0.09), DO (4.0 – 5.3 with mean 5.3 ± 0.19), Chloride (0.311-0.375 with mean 0.346 ± 0.028) conductivity (950-1240 with mean 1162.5 ± 60.15), salinity (0.3) and total dissolved solid (410-549 with mean 525.7 ± 19.13) from all the sampling sites. In current investigations on the relationship of length and weight of 6 different species were presented, total 140 fish were caught between September 2017 and March 2018 from Haleji Lake District Thatta, Sindh. *Notopterus chitala*, *Mastacembelus armatus*, *Notopterus notopterus*, *Channa punctatus*, *Aorichthys aor* and *Oreochromis mossambicus* was enumerated at different length groups. The length weight relationships and correlation of co efficient was analyzed. In the present studies values of b varied from 3.74 *Notopterus chitala*, 2.97 (*Mastacembelus armatus* 2.12 *Notopterus notopterus* 2.24 *Channa punctatus* 2.48 *Aorichthys aor* 3.89 *Oreochromis mossambicus*. The studies reveled that *Oreochromis mossambicus* showed better growth and pursued cube law (b=3.89) followed by *Notopterus chitala* (b=3.74) while *Mastacembelus armatus* (b=2.97). *Aorichthys aor* (b=2.48) and *Channa punctatus* (b=2.24) exhibited closed to ideal. Length weight values and coefficient of condition showed ideal growth of six different species from Haleji Lake, District Thatta, Sindh, Pakistan. It is concluded that the different parameters used in the study revealed that the physico-chemical parameters in the Haleji Lake is considered to be safe limits (WHO 2012) and good to support the survival and production of aquatic environment especially fish.



Invited Lecture IV

Biofouling Of Central Venous Catheters Of Cardiac Patients By Biofilm Forming *Bacillus Species*

Prof. Dr. Anjum Nasim Sabri

anjum.mmg@pu.edu.pk

Department of Microbiology & Molecular Genetics, University of the Punjab, Quaid-e-Azam Campus, Lahore, Pakistan

ABSTRACT:

Presence of Biofilms are adhered and firmly associated with many medical devices. These biofilms are potentially life-threatening and are root cause of many fatal diseases. The present study was aimed to determine the biofilm formation potential of the bacterial strains isolated from central venous catheters and to evaluate the role of extracellular polymeric substance (EPS) production in biofilm formation along with development of resistance against antibiotics. Different strains were isolated from the central venous catheters, Out of which 31.5% showed strong slime production, whereas the rest were intermediate to negative. Bacterial isolates exhibited maximum resistance towards commercially available antibiotics. In general, all the bacterial strains studied showed biofilm forming potential. Catheter lumens stained with Alcian Blue stain indicated presence of extracellular polymeric substance with varying intensity based on number of days of insertion. Bacterial isolated mapped phylogenetically close to the *B. cereus* emetic cluster. Whole genome sequencing confirmed that the isolates possessed a range of genes important for biofilm formation, several of which exhibited upregulated expression in an *in vitro* biofilm model. Genome analysis confirmed presence of several chromosomal β -lactamase genes and a sulphonamide resistant variant of *folP*. This study clearly showed that *B. cereus* persisting in different wards of a hospital environment may constitute a risk factor from repeated contamination of CVCs. Bacteria isolated from the central venous catheters showed strong biofilm formation potential. This may lead to fatal infection if the catheter is inserted for a longer duration. Therefore, it is vital to develop some advanced and effective treatments for these antibiotic resistant biofilm forming pathogens.



Invited Lecture V

Regulatory T Cells In Health And Disease

Prof. Dr. Muhammad Arshad

marshad63@msn.com

Division of Arts and Social Sciences,
University of Education, Lower Mall Campus, Lahore, Pakistan

ABSTRACT:

Regulatory T cells (Tregs) are a specialized subpopulation of T cells. They are known to regulate the immune response and thus maintain the homeostasis and self-tolerance. The most reliable phenotype for Tregs is $CD4^+CD25^{high}CD127^{low}FoxP3^+$. FoxP3 has been considered as the most specific marker for Tregs, which is localized intracellularly. There are two main subclasses of Tregs; natural/thymic Tregs (nTregs/tTregs) and induced Tregs (iTregs). tTregs are produced in thymus while iTregs are produced in response to antigen exposure in the periphery. Tregs can regulate both the pathological and physiological immune responses directly and indirectly. Direct regulation involves secretion of suppressor molecules which causes the direct inhibition of effector T cells functions or direct death of effector T cells. Indirect regulation blocks the functions of antigen-presenting cells (APCs) thus inhibiting the effector T cell activation. Tregs may down regulate their suppressive functions in various conditions. This change of Tregs to ex-Tregs may aids in the rapid elimination of the pathogens. However, this may enhance the immunopathology because the immune response is not properly regulated. Thus, the beneficial and detrimental effects of Tregs depend on various conditions. In autoimmune diseases, decrease in the number of Tregs may aggravate the disease and ex-Tregs aids in tissue damage. Whereas, in cancer reduction of number of Tregs and development of ex-Tregs is beneficial as this may help in elimination of tumor cells.



Invited Lecture VI

Diversity Of Mammalian Fauna From The Siwalik Hills of Pakistan (1982-2019)

Prof. Dr. Muhammad Akhtar

drakhtarfdrc@hotmail.com

School of Zoology,

Minhaj University, Lahore, Pakistan

ABSTRACT:

The Siwaliks is one of the best geological sequence in the world holding the mammalian record from past eighteen million years to sixty thousand years. The mammalian diversity is exceptional and continuous through the times. In the Siwalik sequence we have the opportunity to examine diversity fluctuations and other faunal patterns in relation to shift in depositional environments and vegetation as well as to global and regional climate change. In Pakistan, the Siwalik deposits are especially extensive on the potwar plateau where they are exposed in a folded belt extending from the salt range to the Margala hills in the north and from the Jhelum River in the east to the Indus on the west. Major mammalian groups like, artiodactyls, perissodactyls, proboscideans, carnivores, rodents, lagomorphs and primates, etc. have been collected in the past three decades by various researchers of Pakistan. Among these researchers Prof. Dr. Abu Bakr and Prof. Dr. Muhammad Sarwar are the well known. Pioneering collection work was done by the present presenter since 1982 and various researchers have been trained and guided. The collected artiodactyl fossils belong to the family Bovidae, Giraffidae, Tragulidae, Cervidae, Hippopotamidae. The perissodactyl fossils have been categorized into families Equidae, Chalicotheriidae and Rhinocerotidae, and Proboscideans into six families. Though remains of the carnivores are less in number but these are extremely diverse and include into five families. Rodent and lagomorph remains are rare but are diverse and Primates are special interest in the Siwalik mammalian fauna and remains of the Sivapithecus have been collected



Invited Lecture VII

Effect of locally isolated *Wolbachia* wAlbB induced in *Aedes aegypti* to suppress dengue transmission in Pakistan

Prof. Dr. Nusrat Jahan

dr.nusratjahan@gcu.edu.pk

Department of Zoology,

GC University, Lahore, Pakistan,

ABSTRACT:

Wolbachia is an intracellular endosymbiotic bacterium which occurs naturally in many invertebrates with a broad range of insect species. In recent decade *Wolbachia* has got much importance due to its potential of altering host reproductive processes and to suppress indirectly vector borne human diseases such as dengue etc. One of the most common phenotypic effects of *Wolbachia* on its host population is through cytoplasmic incompatibility (CI) which occurs when non-infected females mate with infected males resulting no offspring. In addition *Wolbachia* inhibit pathogen replication and cause shortening of the life span in mosquito vectors. Dengue is becoming an epidemic in Pakistan with over 400 deaths since 2006. Recent thousands of positive cases from Punjab, Khyber Pakhtunkhwa and other provinces indicated an alarming situation with tremendous risk of future epidemics in Pakistan. Lack of effective vaccine and antiviral drugs make it urgent to find the novel alternate approaches for dengue control in Pakistan. The current study involves detection and molecular characterization of local strain of *Wolbachia* from *Ae. albopictus* using PCR by targeting the *wsp*, 16S rRNA and *ftsZ* genes. The wAlbB *Wolbachia* isolated from wild collected *Ae. albopictus* was successfully induced in dengue vector *Ae. aegypti* via embryonic microinjection. *Wolbachia* presented strong CI effect with no egg hatching in crosses between *Wolbachia* infected males and wild uninfected females. In addition *Wolbachia* infected females reduced life span significantly as compared to wild females. Reduction of the life span and 100% CI effect with complete suppression of dengue vector population are promising features of this *Wolbachia* strain to be used as biological control agent and block dengue transmission in Pakistan.



Invited Lecture VIII

River Indus Fish Biodiversity; Threats And Mitigation

Prof. Dr. Muhmmad Ayub

fishres@hotmail.com

Department of Zoology,

GC University, Lahore, Pakistan,

ABSTRACT:

River Indus is the life of Pakistan. It is one of the longest rivers in the Asia. The total length exceeds 3000 km. Pakistan being pre-dominantly agricultural country depends largely on this water resource. Similarly aquatic fauna especially fish and mammal (Indus blind dolphin is endemic in this river) are abundant and unique. Anthropogenic activities and climate change poses a great threat to the biodiversity of this mighty river. Current paper discuss the major human interventions and their adverse effects on the Indus River in general and fish species in particular. The paper also discuss the effect of hydrological structures and hydropower projects associated with this river. The author also suggest the remedial measures and the current practice to safeguard the fish fauna.



ORAL PRESENTATION SESSIONS



ETHNOPHARMACOLOGY (EP)

**EP01:****Promoting effects of *Azadirachta indica* on mice peripheral nerve regeneration**

Humaira Rasheed and Chand Raza*

Department of Zoology, GC University Lahore, 54000, Pakistan.

chandraza@gcu.edu.pk

ABSTRACT:

Peripheral nerve injuries often result in prolonged disabilities in millions of people across the globe. Compromised recovery following nerve injury is attributed to the limited regenerative capacity of neurons. Currently, effective treatment strategies for rehabilitation of injury-induced lost functions are lacking. Neuroprotective capacities of a medicinal plant *Azadirachta indica* Linn. (Neem) are widely reported. However, its regenerative potential for injured peripheral nerve is largely unknown. Here, we elucidated the potential effect of *A. indica* on mouse peripheral nerve regeneration. Fresh leaves of *A. indica* were dried, ground and ethanolic extract was obtained. Adult Swiss albino male mice were grouped as control (vehicle treated) and treatment (250mg/kg and 500mg/kg) groups (n=06/group). All mice were subjected to unilateral left sciatic nerve crush injury. Mice in the control group were orally administered with distilled water while treatment groups received intra-gastric 250mg/kg and 500mg/kg doses of extract, respectively for 28 days on daily basis. Regeneration of peripheral nerve was assessed using pinprick assay, toe spread motor reflex and sciatic functional index. Our results demonstrated earlier functional recovery in treatment groups. Similarly, we observed improved return of motor reflex during second week of recovery in both the treatment groups, however, all mice regained full motor functional recovery at the end of 3rd week of recovery. Collectively, our study demonstrates regenerative potential of *A. indica* and it might be used as an alternative medicine to treat peripheral nerve injuries.

EP02:**Treatment potential of Berberine in diabetic mice.**

Eisha Tir Razia, Rida Tariq, Sidra Mumtaz and Naila Malkani

Department of Zoology, GC University Lahore, 54000, Pakistan.

eishatirraziahussain@gmail.com

ABSTRACT:

Variety of treatments and therapies are prescribed in medical science for treatment of diabetes type 2 but these treatments have potential side-effects and health related complications. This has led to divert the focus back on herbal medicines for treatment of metabolic syndromes because of less or no adverse side-effect on health. In the present study the anti-diabetic effect of berberine chloride was tested in streptozotocin STZ (200mg/kg body weight) induced diabetic mice and its potential was compared with metformin chloride and *Berberis aristata* plant extract. Mice were divided into six groups. G I served as normal control group and was not treated with anything. G II was treated with root extract of *Berberis aristata* (200mg/kg BW) and G III was STZ induced diabetic group. G IV, G V and G VI had diabetic mice treated with Berberine chloride (200mg/kg BW), Metformin (200mg/kg BW) and *Berberis aristata* (200mg/kg BW) respectively for 45 days. After the treatment the mice were checked for their weight, fasting blood glucose, p53 expression, and histology of kidney, liver, spleen and pancreas. The results showed that berberine chloride exhibits antidiabetic properties and caused significant reduction in fasting blood glucose levels and also improved the body weights. p53 mRNA was also reduced in G IV, G V and G VI as compared to G III. Histopathology of kidney, liver, pancreas and spleen showed that the inflammatory effect caused by diabetes was reversed by berberine chloride. The effects in G III were more pronounced as compared to Metformin (G V) and *Berberis aristata* extract (G VI). The results showed that Berberine chloride was most effective in relieving diabetes symptoms as compared to metformin and *Berberis aristata*. It can be concluded that Berberine has potential therapeutic properties for treatment of Diabetes and its related complications.

**EP03:****Vancomycin-induced nephrotoxicity is reduced by *Berberis aristata* extract through down-regulation of cell proliferation markers**

Farah Ijaz, Ammara Naeem, Sidra Mumtaz and Naila Malkani
Department of Zoology, GC University Lahore, 54000, Pakistan.
ammara.naeem@live.com

ABSTRACT:

Vancomycin is used to treat bacterial infections but there is risk of nephrotoxicity associated with it. Oxidative stress is the possible cause of this nephrotoxicity. Plant extracts have long been used in fighting oxidative stress and have proved quite useful. The present study investigated treatment potential of *Berberis aristata* root extract against nephrotoxicity induced by vancomycin. *Berberis aristata* was collected from Chikar Valley, Azad Kashmir, identified and later analyzed by High pressure liquid chromatography (HPLC) and Gas chromatography–mass spectrometry (GC-MS). Vero cells were used to determine effects of *B. aristata* extract. For determination of apoptotic and anti-inflammatory effects cells were divided into three major groups; Control, Vancomycin and Treated. The control groups were either left untreated (Cn) or treated with 0.1% DMSO. Vancomycin group was treated with 0.6mg/ml (V1), 3mg/ml (V2), and 6mg/ml (V3) of vancomycin, while treated groups were treated with (100µg/ml, 200 µg/ml, 400µg/ml) along with various vancomycin (0.6mg/ml, 3mg/ml, and 6mg/ml) concentrations. The mRNA expression of antioxidant and proliferative markers (*p53*, *p21*, *Cas-4*, *Cas-5*, *Cas-9* and *Cyt-c*) were assessed by qPCR. In results HPLC chromatogram indicated presence of berberine component by comparing the peaks at retention time, while GC-MS detected the presence of volatile compounds with no antioxidant activity. The mRNA expression of all selected markers were found to be upregulated in vancomycin group with decrease of expression in treated groups, indicating the recovery from vancomycin induced damage to kidney cells. It can be concluded from this study that *B. aristata* extract can be used along with vancomycin treatment to minimize its toxicity.

EP04:***Moringa oleifera* induced neuroprotection reduces the rotenone-induced motor impairments in mouse model of Parkinson's disease.**

Rabia Anjum, Chand Raza* and Mehwish Faheem
Department of Zoology, GC University Lahore, 54000, Pakistan.
chandraza@gcu.edu.pk

ABSTRACT:

Parkinson's disease (PD) is the second most common neurodegenerative disease after the Alzheimer's disease. PD affects the motor functions and worsens the quality of life. The present study was aimed to evaluate the neuroprotective effect of *Moringa oleifera* (MO) in the rotenone induced PD mouse model. Ethanolic MO leaf extract (EthMO) was prepared. Adult Swiss albino male mice were divided into three groups; (1) vehicle control group, received 2.5% DMSO in sunflower oil, (2) PD group, received rotenone (2.5 mg/kg) for 21 days, once a day, and (3) treatment group, received EthMO (200 mg/kg) for 28 days + rotenone (2.5 mg/kg) for 21 days, on daily basis. The motor performance of mice was estimated by the open field test. The lipid peroxidation (LPO), catalase (CAT), glutathione-S-transferase (GST) and reduced glutathione were performed to estimate the anti-oxidant potential of MO. Substantia nigra neuronal degeneration of the MO treated /



untreated mice was investigated through histology. MO extract restored the locomotor activity significantly as compared to rotenone treated PD mice. The LPO level was significantly increased while the CAT, GST and GSH activities were significantly decreased in PD group while significantly restored in EthMO treated group. Histological analysis showed the PD features such as shrunken and vacuolated multipolar cells in 45% neurons of rotenone treated group. The EthMO treated groups significantly reduced the neurodegeneration in the mice. Collectively, the MO imparts neuroprotection and significantly rescues the motor deficits in the PD through anti-oxidant means.

EP05:

Evaluation of anti-cholestatic potential of *Berberis lycium* root extract

Shamaila Bashir, Sidra Mumtaz, Naila Malkani and M. Imran Sohail
Department of Zoology, GC University Lahore, Pakistan
shumailabashir46@yahoo.com

ABSTRACT:

Cholestasis, a clinical condition, is characterized by the interruption of bile flow from hepatocytes to intestine, which leads to accumulation of bile acid in the liver. The disease can either be inherited or acquired. The former is because of the mutation in the genes (especially ABCB1, ABCB4, FIC1, FXR) involved in bile formation, while the latter is caused by administered drugs which as a side-effect interfere with the bile forming transporters. In this study the root extract of *Berberis lycium* is evaluate for its anti-cholestatic potential. For that cholestasis mice model were generated by administration of alpha-naphthylisothiocyanate (ANIT). These mice were administered with extract (150mg/kg per day) for 21 days. Then the mice were sacrificed and blood samples and liver portions were collected. The blood (serum) was used to evaluate the Lfts. The liver portions were used for histopathological studies as well as for isolation of RNA which was subsequently subjected for quantitative PCR. The results of this study will be discussed in the conference.

EP06:

Neuroprotective capacities of *Moringa oleifera* augment peripheral nerve regeneration in mice

Authors: Sidra Afzal, Rida and Chand Raza*
Department of Zoology, GC University Lahore, 54000, Pakistan.
chandraza@gcu.edu.pk

ABSTRACT:

Peripheral nerve injuries pose serious threats to human health and cause lifelong debilities. Recovery from the peripheral nerve injuries is not always complete. Moreover, surgical procedures worsen may the situation. The aim of the current study is to evaluate the neuro-regenerative potential of *Moringa oleifera*. This miraculous plant contains at least 46 anti-oxidants in its leaves. These anti-oxidants have a great ability to scavenge the free radicals produced during the damage. Its bioactive compounds include flavonoids, carotenes and phenolic compounds. Moringin, β -carotene and quercetin have a neuroprotective capacity and helps to proliferate and differentiate the neurons. The ethanolic extract of *Moringa oleifera* leaves was prepared. It was administered orally to the Swiss albino male mice. The crush injury was performed on the 7th day of dosing. Behavioral tests pinprick, toe spread and SFI were performed. There was a significant improvement in the sensory and motor function recovery in the groups treated with *Moringa oleifera* comparing with vehicle control group. It is inferred from this study that MO ethanolic extract induces nerve regeneration after crush injury. It is recommended to further investigate the regenerative potential of *Moringa oleifera* at molecular and tissue level.

**EP07:****High temperature treatment effects the medicinal properties of *Allium sativum* and *Zingiber officinale***

Sahar Najam, Marryam Razzaq, Saeeda Aslam, Hira Munir and Kalsoom Sughra
Department of Biochemistry and biotechnology, University of Gujrat.
kalsoom.sughra@uog.edu.pk

ABSTRACT:

Allium sativum and *Zingiber officinale* have anti-inflammatory effect, anti-diabetic effect, protective to gastro intestinal effect, increases the micronutrient absorption, protective to liver, kidney, heart and ulcerative colitis, lipid lowering and anti-obesity effect. Cooking and freezing could have change the composition of active ingredients in these herbs and also medicinal effects. Antioxidant activity along with flavonoid contents and antibiotic activity of garlic and ginger samples treated at various temperatures was checked against pathogenic bacterial strains named *Escherichia coli*, *Micrococcus luteus*, *Enterobacter aerogenes*, *Staphylococcus aureus* and *Ralstonia solonacearum*. Antibiotic assay was performed by disk diffusion method and antioxidant activity was checked by performing DPPH radical scavenging method. Results conveyed that increase in temperature decreases the antibacterial activity of *Allium sativum* and *Zingiber officinale*. Antioxidant activity is enhanced with increasing the temperature up to a certain limit of time afterwards, antioxidant activity is reduced. Phenolic contents increase has direct relation to antioxidant activity.

EP08:**Nephroprotective Effect Of *Cressa Cretica* On Vancomycin Induced Toxicity In Rabbits**

Muhammad Usman Bari¹, Fareeha Subhan¹, Bilal Aslam^{1*}, Faqir Muhammad¹, Sultan Ali², Zia-ud-din Sandhu³, Asif Hussain¹

¹Institute of Pharmacy, Physiology and Pharmacology, University of Agriculture, Faisalabad, Pakistan

²Institute of Microbiology, University of Agriculture, Faisalabad, Pakistan

³Department of Parasitology, University of Agriculture, Faisalabad, Pakistan
cba938@gmail.com

ABSTRACT:

Nephroprotective agents are those compounds that mitigate renal injury caused by nephrotoxins. Various plants are used in traditional medicine to treat numerous diseases and have diversified therapeutic effects. The current study was designed to assess the probable protective effects of *Cressa cretica* hydroalcoholic extract against vancomycin induced renal toxicity in rabbits. Phytochemical qualitative analysis was performed to detect the presence of biologically important phytochemicals. Thirty adult rabbits were divided into five groups (n=6). Following treatments were given intragastrically daily, along with vancomycin intravenously. Vancomycin was administered to all groups except for normal control. Group-I Normal control group was kept on a routine diet. Group-II Untreated control group received vancomycin (1g/kg/day). Group-III Standard treated control group received silymarin (150mg/kg/day). Group-IV and Group-V received two different doses of *C. cretica* 200mg/kg/day and 400mg/kg/day, respectively. Blood samples were collected at 0, 7th and 14th day of experiment for biochemical assay i.e. serum creatinine (SCr), blood urea nitrogen (BUN). Antioxidant status was observed by determining total oxidant status (TOS), total antioxidant capacity (TAC), malondialdehyde (MDA) and catalase level. Vancomycin treatment significantly ($p \leq 0.05$) raised SCr and BUN levels while *C. cretica* showed a dose-dependent



reduction in SCr and BUN levels. Antioxidant status was significantly ($p \leq 0.05$) increased with *C. cretica* treatment as compared to vancomycin untreated group. Histopathological studies showed normalization of renal tissues as compared to vancomycin untreated control group, but less effective than standard treated group. One-way ANOVA was applied to express the difference between groups followed by DMR test.

EP09:

Role of biochar to enhance the ability of indigenous plants to phytoremediate Cr polluted soil

Adeela Farooq¹ and Khizar Hayat Bhatti²

¹Department of Botany, Government College Women University, Sialkot, Pakistan.

²Department of Botany, University of Gujrat, Gujrat, Pakistan.

Adila-bilal@yahoo.com

ABSTRACT:

Industrial waste is major source of contamination of environment. In food chain, presence of industrial metals is reaching to a highly toxic level. Tannery waste contains chlorides, oils, greases, and chromium. Chromium is a direct threat to human health while oils and greases can affect water bodies causing increase in algal growth. Phytoremediation has an aesthetic value as well as is cost effective in restoring habitat and remove contamination rather than to spread the problem to different places. Biochar immobilizes the heavy metals by decreasing their solubility hence toxicity of soil decreases. If *Canna indica* L. is assisted with biochar, it phytostabilizes Cr in root zones. Biochar promotes conversion of Cr⁶⁺ to Cr³⁺. Roots absorb Cr³⁺ and phytostabilizes it. Hence biochar increases plant health and accelerates rate of phytoremediation. This paper will analyze the increase in ability of indigenous plants amended with biochar (produced from organic waste) to phytoremediate Cr toxic soil.

EP10:

Antifungal Activity and Gc-Ms Analysis of N-Butanol Extract of Quinoa Leaves

Iqra Haider Khan¹, Arshad Javaid¹, Dildar Ahmed² and Uzman Khan³

¹ Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan.

² Department of Chemistry, FC College University, Lahore, Pakistan.

³ Department of Chemistry, GC University, Lahore, Pakistan.

iqrahaider_khan@yahoo.com

ABSTRACT:

In the present study, dry leaves of quinoa (*Chenopodium quinoa* Willd.) were extracted in methanol and its n-butanol fraction was separated. Solvent was evaporated and antifungal bioassays were carried out against *Macrophomina phaseolina* using different concentrations (1.562, 3.125, ... , 200 mg mL⁻¹) of the extract in malt extract broth. The entire set of concentrations significantly controlled the fungal growth. The lowermost concentration of the extract (1.562 mg mL⁻¹) reduced *M. phaseolina* biomass by 62% over control while all other concentrations completely controlled fungal growth. GC-MS analysis showed that there were 20 compounds in this fraction. Stigmasta-7,16-dien-3-ol was the predominant compound with peak area of 15.14% followed by 1-butanol, 3-methyl- (11.87%), β -sitosterol (9.93%), γ -sitosterol (8.84%), butane, 2-[1-methylethyl]thio]-(6.51%), cyclohexane, 1,1-dimethoxy- (6.27%), stigmasterol (5.98%) and stigmastanol (4.57%).



FISHERIES AND AQUACULTURE (FA)

**AF 01:****Carcass Quality of Mori, *Cirrhinus Mrigala* Fingerlings Fed Vitamin E Supplemented Diet**

Iqra Majeed¹, Muhammad Afzal¹, Syed Zakir Hussain Shah¹, Mehroze Fatima¹ and Atif Yaqub²

¹Department of Zoology and Fisheries, University of Agriculture Faisalabad, Pakistan

²Department of Zoology, Government College University Lahore, Pakistan.

iqramajeed40@gmail.com

ABSTRACT:

The aim of the study was to determine the carcass quality of mori, *Cirrhinus mrigala* fingerlings fed vitamin E supplemented diet. Experimental diets were supplemented with six different vitamin E concentrations i.e., 0, 25, 50, 75, 100 and 125 mg/kg. The fingerlings were fed at the rate of 2% of their live wet weight on their prescribed diets once daily for two months. Water quality parameters such as dissolved oxygen, pH and temperature were monitored throughout the feeding trial. At the termination of feeding trial, five fish for each parameter were sacrificed for the analysis of whole body proximate composition, fatty acid profile, thiobarbituric acid reactive substances (TBARS) and antioxidant enzymes like catalase, superoxide dismutase and peroxidase. Vitamin E supplemented diets showed non-significant ($p < 0.05$) effect on proximate composition (moisture, crude protein and crude fat) in carcass of *C. mrigala* carcass fingerlings. A significant ($p < 0.05$) decrease in TBARS content and increase in antioxidant enzymes activities was observed in carcass of *C. mrigala* fingerlings with increasing vitamin E levels. This diet showed significant ($p < 0.05$) effect on fatty acids profile of carcass of fingerlings, saturated and monounsaturated fatty acids level were increased while poly unsaturated fatty acids (PUFA's) level was decreased in response to dietary vitamin intake. It is concluded that Vitamin E supplementation significantly decreased TBARS, saturated and monounsaturated fatty acids level while increased antioxidant enzyme activities and PUFA's levels.

AF02:**Pesticides Induced Changes in Growth Patterns of Freshwater Culturable Fish Species**

Muhammad Adnan¹, Asma Noureen¹, Mohsin Raza¹, Muhammad Adnan Ali², Dilawar Hussain²,
Khurshied Ahmad Khan³,

¹Department of Zoology, Ghazi University, Dera Ghazi Khan, Pakistan

²Department of Zoology, Government College University, Lahore, Pakistan

³Department of Agricultural Engineering and Technology, Ghazi University, Dera Ghazi Khan,
Pakistan

agul99603@gmail.com

ABSTRACT:

Growth is an integrated physiological response including both external environmental conditions (food quality and quantity, temperature, water quality) and internal physiological status (health, stress, reproductive state). Growth of fish is strongly correlated with the survival of the fish. In the present days, the use of pesticides at higher rates is done to kill the pests in crops to increase the productivity. Widely applied pesticides e.g. dimethoate, malathion, lindane, propoxur and pentachlorophenol (PCP) has adverse effects on the general growth, embryonic development, gonadosomatic indices and reproduction of several culturable freshwater fishes including *Cirrhinus mrigala*, *Catla catla* and *Labeo rohita*. They affect the body development and maturation of gonads, with respect to size of fish. Chronic exposure of aquatic organisms to pesticides causes serious health hazards in human population consuming pesticide contaminated fish due to their residual effects in body tissues.

**AF03:****DNA Barcoding and Phylogenetic Analysis of fresh water fish *Labeo rohita***

Shumaila Mushtaq & Beenish Nadeem

Department of Zoology, Govt. College of Science, Wahdat Road, Lahore Pakistan

beenishmuhammadnadeem@gmail.com**ABSTRACT:**

Species identification is an important feature for exploring biodiversity of wildlife, forensics, ornamental trade and other fields of biology. Fishes are a highly diverse group of vertebrates and it constitutes more than 50% of all vertebrates. This reveals the importance of study of biodiversity of fishes. Morphometric method for identification of fishes does not fulfill the requirement due to presence of cryptic species. Genetic identification or DNA barcoding can be used as complimentary method of identification. In this method a short segment of gene near 5'-terminus of the mitochondrial Cytochrome C Oxidase subunit 1 (CO1) gene is used in molecular taxonomy and has been selected as the barcode region of the entire animal kingdom. During present work DNA barcoding technique was used to identify a fresh water fish *Labeo rohita* through amplification of CO1 gene. PCR products with desired size were sent for sequencing. Sequences thus obtained were analyzed by using different bioinformatics software like BLAST (Basic local alignment search tool) which is used for alignment of sequences with reference sequences present in data base, CLUSTAL W which is used for alignment of sequences and MEGA 7 (Molecular Evolutionary Genetic Analysis) for phylogenetic analysis of sequences. Study of its phylogenetic relationship with other fish of same species from different regions of the world was also done. Results confirmed the effectiveness of the genetic identification technique and supported the results obtained through morphometric method.

AF04:**Impact of Carbofuran on induction of biochemical alterations in freshwater fish species**Asma Noureen¹, Andeela Shamshad¹, Arshad Javid², Tariq Mahmood³, Khurshied Ahmad Khan⁴,
¹Department of Zoology, Ghazi University, Dera Ghazi Khan, Pakistan²Department of Wildlife and Ecology, University of Veterinary and Animal Sciences, Lahore,
Pakistan³Department of Zoology, Cholistan University of Veterinary and Animal Sciences, Bahawalpur⁴Department of Agricultural Engineering and Technology, Ghazi University, Dera Ghazi Khan,
Pakistanagul99603@gmail.com**ABSTRACT:**

Carbamates and organophosphates are potent pesticides that are routinely used in different household and agricultural practices as effective fungicides and insecticides. Carbofuran is an organophosphate pesticide that causes reduction in protein, glycogen and lactate dehydrogenase (LDH) levels in different body tissues (brain, liver, muscle, gills and heart etc.) of freshwater fishes like *Clarias batrachus*. Researchers have reported that carbofuran exerts duration and concentration dependent biochemical changes in fish body organs. Even very low doses of this pesticide causes inhibitory effects on the activity of terminal enzyme LDH of the glycolytic pathway. The carbofuran exposure has been reported to increase the activity of aspartate aminotransaminase, alanine aminotransaminase, glycogen phosphorylase and superoxide dismutase in hepatic tissues of several fish species while it can exert inhibitory effects on activities of acetylcholinesterase in muscle and brain and catalase in fish liver. Carbofuran is therefore a proven environmental pollutant that is responsible for causing oxidative stress and resulting changes in enzymatic and biochemical profile of freshwater fish species e.g. *Cyprinus carpio*.

**AF05:**

Dietary *Moringa oleferia* Leaf Meal Induce Growth, Boost Innate Immunity and Cytokine Response in Grass Carp

Mehwish Faheem¹, Saba Khaliq², Nazia Mustafa¹, Sundas Rani¹, Khalid. P. Lone¹

¹Department of Zoology, GC University Lahore Pakistan

²Department of Physiology and cell biology, University of health sciences, Lahore Pakistan

mehwishfaheem@gcu.edu.pk

ABSTRACT:

The present research was designed to investigate the growth promoting and immunostimulating properties of *Moringa oleferia* leaf meal (MLM) in grass carp. Juvenile grass carp (22.03 ± 1.164) were fed with diets supplemented with 0% (control/basal diet), 5%, 10% and 15% MLM for 48 days. At the end of feeding trial, skin mucus was used for analysis of lysozyme, protease, antiprotease and peroxidase activity. Head kidney was used for expression analysis of tumor necrosis factor-alpha, interleukin-8, interferon- γ . The results showed that fish fed with 10% and 15% MLM had significant increase in weight gain and specific growth rate. However condition factor was not altered in control and experimental groups. MLM (5% and 10%) inclusion in fish diet resulted in higher skin mucus lysozyme and protease activity, while peroxidase activity increased only in fish fed with 10% MLM and antiprotease activity did not change among groups. mRNA expression of *tnf- α* increased in a dose dependent manner. The expression of *il-8* and *ifn- γ* increased in head kidney of fish fed with 5% and 15% MLM. In conclusion, supplementing juvenile grass carp feed with MLM has growth promoting and immunostimulating effects and it appears that MLM can be used as a growth promoter and immune enhancer for grass carp.

AF06:**Heavy metal induced carcinogenesis in fish**

Asma Noureen¹, Muhammad Farooq¹, Saba Manzoor², Khurshied Ahmad Khan³,

¹Department of Zoology, Ghazi University, Dera Ghazi Khan, Pakistan

²Department of Zoology, Wildlife and Fisheries, University of Agriculture, Faisalabad, Pakistan

³Department of Agricultural Engineering and Technology, Ghazi University, Dera Ghazi Khan, Pakistan

agul99603@gmail.com

ABSTRACT:

Wastes generated from different industrial, mining and agricultural operations contain significant amounts of heavy metals that are released into water bodies and are proven to be potent toxicants causing accumulation into body tissues of aquatic organisms including fish and human beings leading to oxidative stress mediated carcinogenesis. Metals are grouped into biologically essential and non-essential categories. Essential metals like iron, zinc, cobalt, copper manganese, magnesium, calcium, potassium and sodium etc. are required for maintaining good health as they are involved in driving vital biochemical processes of living/aquatic organisms/fish but become toxic if present in excessive concentrations. Fish body tissues normally tolerate low levels of non-essential metallic ions including arsenic, cadmium, lead and mercury but their exceeded quantities exert inhibitory effects on essential metal metabolism. Several evidences indicate that metal exposure periods and concentrations are strongly correlated with development of cancer in fish body. Chronic exposure of metals more severely affects fish and human health by inducing oxidative stress, cell death and DNA damage leading to cancer and associated diseases. International Agency for Research on Cancer categorized arsenic, chromium, cadmium and nickel as Class-I carcinogens that can cause cancer in kidney, liver, epithelial, embryonic and other types of fish body tissues due to long-term exposure of these metals. A better understanding of underlying mechanisms involved in heavy metal dependent carcinogenesis can be helpful in intervention of cancer in fish and its ultimate consumer man. The phenomena of interaction between metallic ions and nucleic acids, metal induced errors in DNA



replication, mutations and chromosomal aberrations etc. are needed to be further studied for better conceptualization of development of cancer and its possible control measures. Antioxidants are considered effective in controlling heavy metal induced carcinogenesis in human body and aquatic organisms. Fish can serve as an excellent model organism in carcinogenesis research as they can easily develop various kinds of cancer.

AF07:

Effects of dietary supplementation of *Bacillus licheniformis* on growth, survival, hematological and immune parameters of Mozambique Tilapia (*Oreochromis Mossambicus*)

Muhammad Nabeel Awan¹, Iqra Majeed¹, Muhammad Kamran² and Atif Yaqub*¹

¹Department of Zoology, Government College University Lahore.

²Department of Animal Sciences, Quaid I Azam University Islamabad.

atif@gcu.edu.pk

ABSTRACT:

The present experiment was conducted to evaluate the effect of dietary supplementation of *Bacillus licheniformis* on growth, hematological and immune parameters of Mozambique tilapia (*Oreochromis mossambicus*) fingerlings. An 8-week feeding trial was carried out at Animal house of GCU Lahore. The fingerlings were fed at the rate of 3% of their live wet weight on their prescribed diets once daily for two months. Different water quality parameters were monitored throughout the feeding trial. Four diets of various concentrations (10^5 , 10^7 and 10^9 CFU g⁻¹) were prepared. All these treatments were applied in triplicates. At the end of the trial, growth, hematological and immune parameters of fish were evaluated. Results indicated that growth rate, weight gain, specific growth rate and feed conversion ratio (FCR) were significantly ($P < 0.5$) higher in fish fed with probiotic containing diet with highest growth observed with diet containing 10^5 CFU/g of probiotic. Leucocyte, erythrocyte count and glucose content were also high in experimental groups as compared to control groups. Total protein content and Peroxidase activity was significantly higher ($P < 0.5$) in fish fed with highest concentration (10^5 CFU/g) of probiotic as compared to control and other dietary groups. From these outcomes, *Bacillus licheniformis* can be concluded as a potential probiotic and can be used for better growth and survival rate of fish in aquaculture practices.

AF08:

Performance, Antioxidant Enzyme Capacity, and Whole Body Fatty Acid Profile of Nile Tilapia (*Oreochromis niloticus*) fed with Alpha-Tocopherol and Copper Nanoparticle Supplemented Practical diets

Ayesha Barkat¹, Atif Yaqub¹, *Maryam Iqbal¹, Muhammad Ayub¹, Khalid Mahmood Anjum²

¹Department of Zoology, GC University Lahore, Pakistan 54000.

²Department of Wildlife and Ecology, University of Veterinary & Animal Sciences Lahore, Pakistan.

atif@gcu.edu.pk

ABSTRACT:

Recent evidence suggests that supplementation of vital micro-nutrients, such as vitamins and minerals can be added to practical fish feeds to yield desirable result in the aquaculture sector. A 12-week study was designed to evaluate the effect of Alpha-tocopherol and copper nanoparticle (CuNP) supplementation on growth performance, antioxidant enzyme capacity, and whole body fatty acid profile of Nile tilapia (*Oreochromis niloticus*). Fish at fingerling stage with average initial weight 11.44 ± 0.02 g were acquired from Fisheries Research and Training Institute Manawa, Lahore and distributed in 12 glass aquaria (70 L water holding capacity 45 x 45 x 30) at the stocking density of 15 fish/aquaria using completely randomized design (CRD). Four isoproteic (35.35 %) and isolipidic (7.47 %) diets were designed denoted as, Alpha-T0 mg/kg+CuNP0 mg/kg, Alpha-T0 mg/kg+CuNP2



mg/kg, Alpha-T500 mg/kg+CuNP0 mg/kg, Alpha-T500 mg/kg+CuNP2 mg/kg and fed to three replicate for each treatment. At the completion of growth experiment, performance was determined by weighing each treatment individually. Significant ($p < 0.05$) increase was observed in growth in terms of final weight (g), average weight gain (g) and weight gain % in group fed with Alpha-T500 mg/kg+CuNP2 mg/kg. Similarly, significantly ($p < 0.05$) improved FCR was also observed in the same group. Maximum survival rate was observed in fish fed with Alpha-T500 mg/kg+CuNP0 mg/kg and Alpha-T500 mg/kg+CuNP2 mg/kg. Significantly ($p < 0.05$) improved activities of catalase (mU/mg protein) and peroxidase (mU/mg protein) were calculated in liver and gills of fish fed with Alpha-T500 mg/kg+CuNP0 mg/kg and Alpha-T500 mg/kg+CuNP2 mg/kg. The content of unsaturated fatty acids (USFAs) in whole body of fingerling *O. niloticus* were significantly higher in group fed with Alpha-T500 mg/kg+CuNP0 mg/kg. Hence, the results indicated that supplementation of diet with alpha-tocopherol (500 mg/kg) and copper nanoparticle (CuNP2 mg/kg) could reduce oxidative stress and improve the growth performance and health profile of fingerling *O. niloticus*.

AF09:

Forensically Informative Nucleotide Sequencing (FINS) for shrimp identification in raw shrimps sold at Karachi Fish harbor, Pakistan

Syeda Hadiqa and Noor Us Saher
Centre of Excellence in Marine Biology, University of Karachi
noorusaher@yahoo.com

ABSTRACT:

Shell fish sold in Pakistan is at high risk of adulteration with inferior valued products in trade instead of real one. This research was based on bar-coding gene techniques with the support of GenBank data and for the direct sequencing of DNA fragments amplified by PCR on shrimps species purchased from Karachi and Korangi Fish Harbors, Pakistan. Recognition of 74 samples of shrimps was verified in the lab from which eleven were unrecognized due to lack of morphological parameters or were a bit younger to diagnose morphologically. The genetic identification of species through phylogenetics analysis of DNA sequences from Genbank were procured and phylogenetics tree was formed to determine the success rate of adequate identification, neighbor joining similarities and the level of mislabeling. The obtained sequences were aligned and compared with known reference sequences. GenBank DNA barcoding of mitochondrial cytochrome c oxidase subunit I (COI) gene. 650 bp sequences were obtained when universal primers (LCO1490 and HCO2198) were used. Their similarity was checked with BLAST-NCBI, each and every species showed > 88% identity. The overall identification rate was 18.1 % while; the rate of mislabeling was 81.8% in nine out of eleven shrimps that included in the low end of mislabeling rates as compared to 74 samples . On the whole, the phylogenetics tree revealed the polyphyletic clads of *Fenneropenaeus* , *Penaeus* , *Metapenaeus* except *Metapenaeopsis stridulans* which showed monophyletic clad. Minimum divergence (0.00%) was observed between haplotypes which overlaps each other. This study can be a key identifier for specie identification in case of falsification with reference to their ancestral lineage.

**AF10:****Resource management of commercially important mud crab *Scylla serrata* in coastal waters of Pakistan.**Farah Naz¹, Noor Us Saher², Mustafa Kamal³¹Institute of Marine Science, University Karachi²Centre of Excellence in Marine Biology, University of Karachi³Department of Biochemistry, University of Karachi, Pakistan

farahasjil@yahoo.com

ABSTRACT:

Species complex of genus *Scylla*, *Scylla serrata* an important Portunid with high commercial and economic importance found in tropical to warm temperature zone, Pacific and Indian oceans and is the resource of the commercial fishery and aquaculture industries in the Indo-West Pacific region. Due to their high demand in local and foreign markets, they are heavily exploited from the Pakistan coast. The depletion of crab, alter the coastal waters sources has imposed an urgent need for improving crab population. Sea ranching and sea farming as a culture system where the first crop is reared in restricted areas, then its juveniles are released into the natural environment and adults are fished from this natural environment. Before the commencement of the Sea ranching there is a need to correctly identify *Scylla* complex on the morphological and molecular basis. For the very same reason, present study attempted to classify this confusion by collecting material from the coastal waters of Pakistan and used two molecular genetics techniques, isozyme electrophoresis and mitochondrial DNA sequence analysis on the basis of the large subunit of COI and 16S rRNA gene. During present study two species of *Scylla* complex: *S. serrata* and *S. olivacea* were identified and confirmed through molecular taxonomic markers.

AF11:**Comparative evaluation of growth response and expression of growth and immune related genes in different stocks of *Labeo rohita* (Hamilton, 1822) reared under semi-intensive culture system**

Muhammad Kamran, Amina Zuberi, Muhammad Ahmad and Hafsa Razzaq
Fisheries and aquaculture program, Department of animal sciences, Quaid I Azam
University, Islamabad.
amina.zuberi@qau.edu.pk

ABSTRACT:

Faster growth and resistance to disease are the qualities mostly demanded and is prerequisite to the sustainable aquaculture of any fish producing country. This study was designed to evaluate the genetic difference in term of growth rate, immune response and resistance against pathogen in different stocks of F1 fingerlings of *L. rohita*. For evaluation of growth performance, fingerlings from five different hatcheries of Pakistan, pit tags and reared in communal ponds for 3 months under semi-intensive culture conditions. For immunity again environmental influence was minimized by conducting experiments under control condition in a communal pond and challenged with *S. aureus*. Results of growth performance indicated the significant ($p < 0.05$) difference in weight gain, weight gain percentage, final biomass and specific growth rate of different strain of *L. rohita*. It was observed that TH-S followed by MCH-S showed significantly higher growth performance. The expression of IGF II and Preproghrelin genes followed similar trend. The results of challenge test showed highest survival (%) in TH-S followed by MCH-S while lowest survival percentage in SH-S. Moreover, the expression of immune related gene i.e., Natural killer enhancing factor (NKEF) and Complement component (C9) genes also supported challenge test study. Overall results indicated the genetic variability in term of growth performance and disease resistance in different strain of *L. rohita* collected from different hatcheries. Based on results, it seems that TH-S is genetically more vigor in term of growth rate and disease resistance.



ENTOMOLOGY, SERICULTURE AND TAXONOMY (EST)

**EST01:****Zika Virus Vaccine Development and New Challenges**

Ahmad Munir, Muhammad Naeem *

Department of Biochemistry, University of Agriculture, Faisalabad, Pakistan
amunir14046@gmail.com**ABSTRACT:**

Zika virus (ZIKV) has now emerged globally after causing congenital infections and microcephaly in America in 2015. Being a preventable disease, the first line of defense against ZIKV would be to vaccinate the highly susceptible target population, especially pregnant women. To control and eliminate this virus, different research institutes, public health infrastructure and industries has enabled the development of a suitable vaccine. Immunization and pathogenesis studies different animal model with different conditions like pregnancy, has defined the immune correlates of protection. However, the development of Zika vaccines, besides of efficiency and confirmation of safety, has some major challenges. One of the challenges is related with poor health due to weak quality. As the primary objective of Zika vaccination is the prevention of vertical transmission of the virus to the unborn fetus, the safety and efficacy requirements for this vaccine remain unique when compared to other diseases. This represents the measures that allowed rapid progress in the field of vaccine development of ZIKA virus and it also highlights the pathway for successful Zika virus vaccine against different challenges.

EST02:**Emergence of Mosquito Borne Viral Diseases in Pakistan**Jabir Ali¹, Muhammad Naeem^{2*}¹Institute of Microbiology, University of Agriculture, Faisalabad, Pakistan²Department of Biochemistry, University of Agriculture, Faisalabad, Pakistan
jabirjinnah@gmail.com**ABSTRACT:**

Mosquitoes are blood feeding type of vectors that bite to a particular host and then suck blood. These vectors transmit various diseases causing agents into the host system. In Pakistan, mosquito borne diseases are misdiagnosed due to absence of the diagnostic facilities. The most common mosquito borne disease in Pakistan are chicken gunya, dengue fever and zika virus. These diseases are common in poor standard areas. Death rate increases in Pakistan due to more attack of mosquitoes borne viral infections. Mosquitoes breeding sites are water bodies, discarded tyres, water tanks, bottles, cups and ant traps. Various environmental factors like climate change and water resources now increases the breeding sites of mosquitos in most areas of Pakistan. There is lack of basic medical education in mosquito affected areas in Pakistan. The basic objective is to highlight the current status of emerging mosquito borne diseases in Pakistan like chicken gunya, dengue fever, West Nile, Zika virus and Malaria. There is more need of prevention and understanding of factors that involved in spreading of mosquito borne diseases. There is more need of funding to hospitals for various projects in controlling of vector borne infections also needed fundamental steps for their prevention.

**EST03:****Study of the Phthirapteran Parasites (Phthiraptera: Amblycera and Ischnocera) found from Wild Partridges (Galliformes: Phasianidae) of Sindh, Pakistan**Jasarat Ilyas Jokhio¹, Saima Naz¹, Ishrat Fatima¹ and Sajid Siyal¹¹Department of Zoology, University of Sindh, Jamshoro-76080, Sindh, Pakistan.
jasaratilyas@gmail.com**ABSTRACT:**

External parasites include chewing lice which cause a great loss to the birds. The old world quails and francolins of Phasianidae family are popular as Partridges. The 21 partridges species of *Francolinus* are present in world while as 05 species (*Alectoris chukar*, *Lerwa lerwa*, *Ammoperdix griseogularis*, Grey Partridge or *Francolinus pondicerianus* and Black Francolin or *Francolinus francolinus*) are found in Pakistan. All of them are found from Sindh except *Lerwa lerwa*. The second population of the current study is *Coturnix*, commonly known as Quail or Batair has total 08 species globally while as 04 and 02 of them (*C. coturnix* and *C. coromandelica*) are found abundantly in Pakistan and Sindh, respectively which are useful for both as pet and farming birds. Partridges are severely affected from various parasitic diseases which impact on public health too because of the status of “least concern” given by IUCN to the Quail species to be legally hunted and eaten as delicious as well as medical therapeutic food. Keeping in mind the general perspectives of its public health and nutritional significance, this the first ever research study on the parasites of Partridges species was carried out in Sindh, Pakistan. The study showed the presence of external as well as internal helminthes parasites on Francolin followed by the district wise survey and the collection of Francolins from the different districts of Sindh. All the collected birds were inspected for the parasites. The prevalence of parasites on Francolins was found 100% from all the collected birds. The intestinal parasites were processed followed by Autopsy and recovery prior to preservation in 70% alcohol and staining in Borax carmine to mount on slides with Canada balsm. For the ectoparasites processing, the collected lice (through DDT powder on feathers and shuffling thoroughly the live birds in field and lab) were preserved in 70% ethanol, prior to slide preparation using KOH and passing from ethanol series and mounted in the Canada Balsam using standard method for the identification of species forth. During the present study, different species of the family Philopteridae (Ischnocera) and family Menoponidae (Amblycera) were obtained from various species of Partridges. Finally the taxonomic perspectives were applied to study them. The seven Phthirapteran species found from different bird species of *Coturnix* genus belonging to Sindh are; *Colpocephalum turbinatum* (Denny, 1842) Amblyceran lice, *Colpocephalum barbuis* newly discovered Amblyceran lice contribution to Science as ‘species novum’, *Columbicola columbae* (Linnaeus, 1758) Ischnoceran lice, *Cuclotogaster cinereus* (Nitzsch, 1866) Ischnoceran lice, *Goniodes astrocephalus* (Burmeister, 1838) Ischnoceran lice, *Menacanthus abdominalis* (Piaget, 1880) Amblyceran lice and *Menacanthus pallidulus* (Neumann, 1912) Amblyceran lice, all with new country records from Pakistan and new host records too. In this way, the four external parasitic species of Phthirapteran order found from different Partridge birds are; *Menacanthus pallidulus* (Neumann, 1912) Amblyceran lice, *Menopan pakistanies* is an Amblyceran lice as species novum to Science is an , *Cuclotogaster barbara* (Clay, 1938) and *Goniocotes sindhiensis* (species novum) Ischnoceran lice. All of the mentioned lice species have been reported for the first time from Sindh region, making new locality and new host records from Sindh, Pakistan while as *Menacanthus pallidulus* was the single lice species which was found from both the Quail and Francolin which indicated the host-wise prevalence as well. Overall prevalence was recorded 100% from all birds while as different infestation parameters were also known for the infestation of Lice on these economically important birds of the region.

**EST04:****Feeding Behaviour of Mantidae species (Mantodea) from Matiari, Sindh, Pakistan**

J. A. Khokhar, T. J Ursani, Mamona, Samina Malik, & Fareeda Memon
Department of Zoology, University of Sindh, Jamshoro- 76080 Pakistan
jawaid.khokhar@usindh.edu.pk

ABSTRACT:

The sum of activities of animals that is directed towards the procurement of nutrients is collectively called as feeding behaviour. The same food or the prey is procured differently by different predators with the help of special capabilities i.e Formicidae and Mantodea. Mantodea is a group of mostly large and conspicuous predatory insects with versatile, unique and special capabilities. They prey upon a wide array of animals, ranging from springtails to small vertebrates hence are the best biological pest control agent. Observing the feeding behaviour of praying mantids under natural conditions is difficult due to their speed, camouflage, low lying in vegetation etc. That's why this study was under taken to see feeding behaviours of three diverse occurring species in Laboratory conditions. Consequently their oothecae (egg case) were collected sorted out for rearing. The collected oothecae fixed in aerated cages with all required factors and after hatching the feeding behaviours of *Tenodera attenuata*, *Sphrodomantis transcausica* and *Mantis religiosa* was recorded.

EST05:**Taxonomy of Spiders from District Sohbatpur, Baluchistan**

Muhammad Luqman, T. J. Ursani, J. A. Khokhar, Samina Malik, Asif R. Soomro And Imdad Ali Channa
Department of Zoology, University of Sindh, Jamshoro- 76080 Pakistan
jawaid.khokhar@usindh.edu.pk

ABSTRACT:

Spider classified in Kingdom-Animalia, Phylum-Arthropoda, Class-Arachnida and Order- Araneae has group of spiders on the 7th number in ranked in biodiversity. The study of spider fauna of province Balochistan District Sohbatpur has not been carried out. This area is pioneer for searching spider's diversity. This present work has been an attempt to provide relevant information regarding spiders which would be base line documentation for the future studies in the province of Baluchistan, the study area, District Sohbatpur Balochistan lies between consisting 28° 31' 15" North, 68° 32' 30" East. Sohbatpur is a city in the Pakistani province of Balochistan and the headquarters of the newly established Sohbatpur District, until 2012 part of Jaffarabad District Sohbatpur. The recommended crops for the district according to its ecological zone Wheat, Barley, Mustard, Gram, Mutter Pulse, Masoor, Vegetables, Fodder, Sunflower, Rice, Jowar, Maize, Pulses, Onion. A survey was carried out during November Month 2017 to month of December 2018 in different ecosystem of this area to measure the spider diversity. The material was collected by hand picking, Pitfall traps and sweep with firm, beat sheet and pooter methods. The collected material was then brought to laboratory in film- canisters/jars having 70% alcohol. The specimens were thoroughly examined under Stereoscope dissecting binocular microscope. Identification of specimens was done with the help of keys and description. A total of 1173 specimens were collected and sorted out into 08 species belonging to 06 families and 07 genera, having percentage of Lycosidae 42.02%, Tetragnathidae 18.32%, Salticidae 18.15%, Pholcidae 12.36%, Araneidae 9.03% and Theridiidae 0.08% namely *A.trifasciata*, *A. Pradhani* of family Araneidae, *Lycosa terrestris*, *Pardosa birmanica* of family Lycosidae, *Tetragnatha javana* of family Tetragnathidae, *Crossoprizaursani* n.sp of Family Pholcidae, *Lactrodectus hassetli* of Family Theridiidae and *Phidippus kalperi* n.sp of Family of Salticidae were recorded first time from the different areas of District Sohbatpur Baluchistan. *Crossopriza ursani* and *Phidippus kalperi* are described as a new species to science; they were collected from host plant, grasses, under stones, tunnels in the ground, sandy soil, canals, foliage, rice and wheat fields.

**EST06:****Biodiversity of Spider fauna from various districts of Sindh, Pakistan**

Tahira Jabeen Ursani, Jawaid A. Khokhar, Asif Raza Soomro & Samina Malik
Department of Zoology, University of Sindh, Jamshoro - 76080 Pakistan
tjchandio65@gmail.com

ABSTRACT:

Sindh is the third largest province of Pakistan (Karachi is its capital), extended 579 km from north to south and 442 km from east to west, with an area of 140,915 km² is subtropical agricultural zone (has four weathers) having appropriate to complimentary average temperature conditions which give positive favoritism to biota. Due to this a variety of crops are grown, and people of this area frequently use pesticides, to control pests, but extra they bestow dangerous consequence on many non-target animal fauna including spiders. Spiders are macro invertebrate predators in agro and non agro ecosystems and habituated in every part of terrestrial environment. They can drastically minimize pests in agricultural fields and are best bio-control agents. In support of this, biodiversity of spider fauna undertaken to see the species richness and evenness while measured with three Simpson's Indexes. The spiders were collected from agro and non agro fields and organize an inclusive and updated record of biodiversity of Arachnida occurring in 20 districts of Sindh. Throughout survey 596 spiders were collected and arranged into 9 families, 28 genera and 59 species. We found supplementary spider fauna in uncultivated fields than cultivated fields.

EST07:**Spider Guilds in the Sugarcane fields from Matiari & Hyderabad, Sindh, Pakistan**

Samina Malik, T. J. Ursani, J. A. Khokhar & Asif Raza Soomro
Department of Zoology, University of Sindh, Jamshoro- 76080 Pakistan
khokharjawaid@gmail.com

ABSTRACT:

Term Guild in Ecology is a group of intimately related species which exploits for same breeds of the resources in similar ways as their shared ancestry. This found in arthropods like spiders which have led to numerous attempts to classify them into guilds. Their study is vital because spiders can play a predatory role and could be helpful in reducing pest damage to crops. At this point in time, we intend an unconventional approach to guild classification of spiders, using quantitative analysis of ecological characteristics of spider families. Regarding importance of Guild study the investigation of two districts were selected and 2345 specimens were collected and a few live behaviors of spiders were observed during May-September 2018. The collected object was sorted out into nine families and fourteen genera. This loom recommends two guilds of spiders, one on the basis of spiders feeding habits and other on their circadian behavior. As recent studies have shown assemblages of spiders, impact on pest populations and a better understanding of spider community structure among crops which is crucial in future studies of the arthropod fauna in agro ecosystems.

**EST08:****Diversity of Avian Fauna in Relation to Agro-Ecosystem in Sheikhpura**

Bilal Mustafa, Iqra Majeed and Atif Yaqub
Department of Zoology, Government College University Lahore.
atif@gcu.edu.pk

ABSTRACT:

The present study was conducted to report the diversity of bird fauna inhabiting Sheikhpura district, Punjab, Pakistan. Almost 55 species, 32 families and 16 orders were observed. Among 16 orders, Passerine was most abundant by having 16 (31%) species, followed by Columbidae 6 (11%), the least number of bird species is present in order Podicipediformes, Piciformes and Caprimulgiformes 1 (3%) species. Biodiversity monitoring was based on breeding, habitat, migratory status, population trend and feeding habits of the birds. After the completion of surveys, it was recorded that seven species were year round breeders; 43 species breed during different months of the year with most of them breeding during monsoon while five species were non-breeders. Based on habitat, 24 (44%) terrestrial and 31 (56%) semi-aquatic habitat species were identified. According to IUCN category 1 (2%) near threatened and 54 (98%) least concern species were present. According to population trend 28 (52%) were stable, 14 (26%) were decreasing and 12 (22%) of avian species were increasing in their numbers. On the basis of migratory status 43 (78%) species were residents, 7 (13%) were winter visitor and 5 (9%) were summer visitors. Feeding guild is dominated by omnivores 14 (29%), followed by insectivores 12 (22%), carnivores 7 (13%), grainivores 7 (13%), pisciformes 6 (11%), Frugivores 5 (9%), herbivores 3 (5%) and nectarivores 1 (2%) birds. As per observation, 512 bird individuals were recorded during March, 498 in July, 380 in October and 396 individuals in September. Diversity was calculated by using different statistical formulae. Based on current study, Shannon Weiner index value is 2.71, Simpson diversity index value is 0.43, species evenness value is 0.67, Margalef index value is 6.29, Menhnick index value is 0.75 and census index value is 8.20. Major threats to birds are filling of ponds, introduction of invasive species of plants, anthropogenic activities, and hunting and catching of wild bird for sports and cage bird selling. There is a dire need to halt major threats to birds.

EST09:***In vivo* studies of Silk Fibroin and Chitosan Nanoparticles for functional peripheral nerve regeneration in albino mice.**

Noor ul Ain Shakeel, Hafiz Muhammad Tahir and Chand Raza*
Department of Zoology, GC University Lahore, 54000, Pakistan.
chandraza@gcu.edu.pk

ABSTRACT:

Peripheral nerve injury (PNI) is becoming global problem and are leading source of long-lasting disabilities affecting motor and sensory functions. According to the World Health Organization, 3.2 million people suffer from PNI annually. The treatment of nerve injuries has taken a new dimension with the development of tissue engineering techniques. Prior to tissue engineering, surgery by end to end nerve suturing and nerve grafting were the only options for effective treatment. Peripheral nerve tissue engineering researchers have been discovering different approaches to replace nerve grafts. Naturally occurring biomaterials such as Silk fibroin (SF) and Chitosan (CS) owing to their excellent biocompatibility, biodegradability, availability, may show remarkable regeneration potential. The aim of this study is to prepare SF and CS nanoparticles and evaluate its neuro-regenerative potential. The crush injury was performed on sciatic nerve of male Swiss albino mice. SF-CS nanoparticles were administered on injury site. Behavioral tests (Pinprick for sensory function assay, Toes Spread



for motor function assay, Sciatic function index for locomotory function assay) were performed to assess the recovery situation. Results demonstrated that there is significant enhancement of functional recovery in SF-CS nanoparticles treated group as compare to vehicle group. It is concluded that silk fibroin and chitosan nanoparticles shows significant regeneration potential after nerve injury, however the underlying mechanism of accelerated recovery remains to be elucidated.

EST10:

Functional Response and Feeding Potential of different Predators *Coccinella septempunctata*, *Chrysoperll carnaea* and *Syrphus confrater* Linnaeus against wheat Aphid under Laboratory conditions

Shahbaz Ahmad, Mubeen Sarwar, Tahir Shafeeq and Muhammad Waqar Alam
Institute of Agricultural Sciences, University of the Punjab, Lahore, 54590
shahbaz.iags@pu.edu.pk

ABSTRACT

The study was conducted to find out the functional response and feeding potential of different stages of larvae of *Coccinella septempunctata*, *Chrysoperll carnaea* and *Syrphus confrater* under laboratory conditions during 2018-2019. The results showed that larvae of *Chrysoperrla carnea* consumed the highest number of aphids (average 72.259 aphids/day) followed by *Coccinella septempunctata* (average 62.56 aphids/day) and *Syrphus confrater* (average 41.19 aphids/day) during their larval span. The overall consumption of aphids per day was high during 2018 while it was low in 2017. Comparative prey consumption of third instar of *C. carnea* maximum number of aphids (83.29) as compared to first instar who consumed (62.36) aphids per day. Similarly, fourth instar of *C. septempunctata* consumed maximum prey density (111.57) while it was quit low in first instar (25.68). Pre consumption of *S. confrater* was maximum during the third instar (69.58) and it was minimum (10.78). The results suggested that *C. carnaea* is efficient predator than that of *C. septempunctata* and *S. confrater*. It is also concluded that feeding potential could effective for the Integrated pest management of Aphid on the wheat crop.



WILDLIFE, CONSERVATION AND PALAEOLOGY (WCP)

**WCP01:****The Extinct Rhinocerotids from the Middle-Late Miocene Siwaliks of Pakistan**

Abdul Majid Khan
Department of Zoology, University of the Punjab, Lahore
majid.zool@pu.edu.pk

ABSTRACT:

The living representatives of the family Rhinocerotidae are present in the Asian and African continents. In the prehistoric period as well there were the rhinocerotids species in both these continents but now these species are in the list of extinct rhinocerotids. This study has described the biogeography and revised the systematics of an extinct rhinocerotid species named as *Chilotherium intermedium*. The newly discovered dental remains of this extinct species used in the study are collected from the Middle Miocene (Chinji Formation) and Late Miocene (Nagri Formation) deposits of the Siwaliks of Pakistan. *Chilotherium intermedium* is the most abundant rhinocerotid species in the Lower and the Middle Siwaliks of the subcontinent. However the generic allocation of the species has been changed several times in the past. A careful comparison of the newly discovered remains with previously described dental remains of *Chilotherium intermedium* and *Subchilotherium intermedium* by several workers has led the authors to consider *Chilotherium* as a valid generic name for the species. This study can be helpful in understanding the evolutionary history of rhinocerotids in Asian region.

WCP02:**Non-genetic Etiology of Enamel Hypoplasia in the Extinct Artiodactyls of the Siwaliks of Pakistan**

Rana Manzoor Ahmad^{1,2}, Abdul Majid Khan^{*2}, Ayesha Iqbal², Amtur Rafah², Muhammad Tahir Waseem²

¹Department of Zoology, University of Okara, Punjab, Pakistan

²Department of Zoology, University of the Punjab, Lahore, Pakistan
majid.zool@pu.edu.pk

ABSTRACT:

The enamel hypoplasia is a dental defect characterized by thinning to tooth enamel. This tooth anomaly is observed in both extinct as well as extant mammals. This defect can be genetic or non-genetic in its origin. In order to detect the etiology of enamel hypoplasia in the extinct Siwalik artiodactyls the jaw fragments belong to different Siwalik artiodactyl families are analysed keeping in view the criteria given in available literature that in case enamel hypoplasia is an inherited disorder in extinct animals, than the individuals having inherited enamel hypoplasia should have signs of enamel hypoplasia on all teeth in their buccal cavity. No any jaw fragment having all teeth affected with enamel hypoplasia is observed in this study. This indicates that in studied artiodactyl samples observed enamel hypoplasia is not inherited but due to some type of environmental or nutritional stress during growth and development period of these animals. There is always a limitation exists in the available data in case of fossil material. Further studies may be able to find an extinct Siwalik species that had genetic etiology for this disorder but current findings reveal that the Neogene mammals were suffered with non-genetic enamel hypoplasia caused by environmental and or nutritional stress.

**WCO03:****The Systematic Investigations of large Boselaphines from the latest Miocene Siwaliks, Pakistan**

¹Muhammad Tahir Waseem, ¹Abdul Majid Khan, ¹Saliha Khalid, ^{1,2}Rana Manzoor Ahmad, ¹Ayesha Iqbal and ¹Muhammad Ameen

¹Department of Zoology, University of the Punjab, Lahore (54590)

²University of Okara, Punjab, Pakistan.

majid.zool@pu.edu.pk

ABSTRACT:

Current study deals with systematic investigations of Boselaphine specimens belonging to genera *Pachyportax* and *Selenoportax*. The available information on both taxa is scanty and only few specimens are known for both genera especially *Pachyportax*. The members of both genera have medium to large sized body with strong hypsodonty of teeth representing grazing on coarse grasses and shrubs in the late Miocene Siwalik habitats of Potwar Plateau. At the apex of molar, crown is narrow and represents selenodonty in *Selenoportax*, while a broader crown in *Pachyportax* which indicates strong hypsodonty. The present sample add valuable information on systematics, dental morphology and dietary habits of latest Miocene (7-5 Ma) boselaphines which are represented today by their living kin *Boselaphus tragocamelus* and *Tetracerus quadricornis*.

WCO04:**Discovery of the New Remains of Middle Miocene Representatives of a Living Bovids Genus from the Siwaliks of Pakistan**

Amtur Rafeh¹, Abdul Majid Khan¹, Rana Manzoor Ahmad^{2,1}, Ayesha Iqbal¹, Muhammad Tahir Waseem¹

¹Department of Zoology, University of the Punjab, Lahore, Pakistan

²Department of Zoology, University of Okara, Punjab, Pakistan

majid.zool@pu.edu.pk

ABSTRACT:

The *Gazella* is the bovid genus that has its living representatives in both Asia and Africa. In Pakistan the recent representatives of this genus are *Gazella bennettii* and *Gazella subgutturosa subgutterosa*. The *Gazella* has a geological range of millions of years. The representatives of this genus were even present during the Miocene epoch. One representative of this genus from the Middle Miocene Siwaliks of Pakistan has been described and discussed in this paper on the basis of its newly discovered dental remains. These remains comprises of the isolated upper and lower molars. The Boselaphine genus *Gazella* has great diversity from Middle Miocene to Pliocene in the Siwalik region. The morphological characteristics indicate it as one of the earlier bovid with simple morphology. The geographical range of this bovid genus was from Africa to Eurasia even during Middle Miocene epoch.

**WCO05:****New Remains of *Kobus porrecticornis* from the Late Pliocene of Pakistan**

Ayesha Iqbal¹, Abdul Majid Khan*¹, Sadaf Aslam¹, Rana Manzoor Ahmad^{2,1}, Muhammad Tahir Waseem¹, Muhammad Akhtar³

¹Department of Zoology, University of the Punjab, Pakistan.

²Department of Zoology, University of Okara, Pakistan.

³Department of Zoology, Minhaj University, Lahore, Pakistan
majid.zool@pu.edu.pk

ABSTRACT:

The tribe Reduncini belongs to family Bovidae but they are different from other bovids for their rounded cusps while other bovids have blunt cusps. The Reduncini fossils represented by only upper and lower dentition. The present dental material is attributed to *Kobus porrecticornis* due to more constricted lobes at lingual side than buccal side of the molars. The premolars are comparatively reduced size with deep furrow. The reduncine remains are recorded from Indian Subcontinent, Africa, and Levant as well. The reduncines are inhabited in wetland as well as watered habitat. The Tatrot outcrops of the Late Pliocene Upper Siwaliks are characterized by the presence of four antelope species, along with several other mammalian taxa, including *Equus sivalensis*, *Elephas planifrons*, *Hemibos triquetricornis*, *Hexaprotodon sivalensis*, and *Rhinoceros sivalensis*.

WCO06:**New Giraffid fossils from Chinji Formation of Siwaliks, Punjab, Pakistan.**

Kiran Aftab¹, Muhammad Shadab¹ and Zaheer Ahmed²

¹Zoology Department, University of Gujrat, Gujrat, Pakistan

²Zoology Department, GC University, Lahore

dr.kiran@uog.edu.pk

ABSTRACT:

New dental material of Giraffidae is recorded from the Chinji Formation of Siwaliks, Punjab, Pakistan. The specimens are assigned to two genera *Giraffokeryx* and *Giraffa*. The new material comprises isolated teeth, maxilla and mandible fragments. The material originates from Chinji Rest House, Rakh Wasnal, Lava, and Ratial. These localities are assigned to Middle Miocene age from 14.2-11.2 Ma. The lower cheek teeth of *Giraffokeryx punjabiensis* are quadrate with a very weak stylids, median ribs and ectosylids. *Giraffa priscilla* have strong stylids, median ribs and broad crown as compared to *Giraffokeryx*. This species is endemic to the Chinji fauna which was wet and humid with increase precipitation. These lower sized giraffids preferred to inhabit the forested areas of the Siwalik. The Chinji fauna resembles with Eurasian and African Middle Miocene faunal elements. *Palaeotragus* and *Injanatherium* has been discovered from different localities of Eurasia and Africa which are similar to *Giraffokeryx*. Now family Giraffidae includes only two living species which are present in Ethiopian region.

**WCO07:*****Giraffokeryx* Remains from Dial Locality of Lower Siwaliks, Pakistan**

Kiran Aftab^{1*}, Zaheer Ahmed² and Muhammad Shadab¹.

¹Zoology Department, University of Gujrat, Gujrat, Pakistan

²Zoology Department, GC University, Lahore

dr.kiran@uog.edu.pk

ABSTRACT:

New specimens of *Giraffokeryx* have been selected for this research work have been recovered from Dial. This locality is located on Phadial-Padhri road and represent the Lower Chinji Formation with estimated age of 14.2-13.2 Ma. The newly described samples are sub hypsodont with prominent para- and mesostyles, stylids are weakly developed or absent. The major cusps are in a straight line. Entostyle and ectostylid are tiny or absent. The anterior rib is more prominent as compared to posterior one. *Giraffokeryx punjabiensis* could not survive with large giraffids and disappeared before the onset of the Dhok Pathan Formation (ca 10.2 Ma). The paleoenvironment of the Lower Chinji Formation was wet and humid having extensive forest component and developed grassy lands.

WCO08:**The Pros and Cons of African Lion's Cubs (*Pantra Leo*) Hand Rearing**

Bushra Nisar Khan^{1*}, Muhmmad Azhar², Gulbina Saleem¹, Amreen Saba¹, Syed Husnain Ali Asghar³

¹Centre for the Undergraduate Studies University of the Punjab, Lahore, Pakistan. ²Safari Zoo, Lahore, Pakistan, ³Department of Pathology, University of Veterinary and Animal Sciences, Lahore Pakistan

bushra.hons@pu.edu.pk, bushrank2007@gmail.com

ABSTRACT:

African Lion (*Pantra leo*) are most attractive exhibits of zoos and safaris for better management of this vulnerable species particular attention should be given to breeding plans. It is common at captive sites that lioness completely neglected newborns; generally at that stage hand rearing is preferred. However for normal growth and social behavior of hand reared cubs, the quality and regularity of care given by professional staff are very important. This study will be valuable to highlight the best practices for hand rearing of lion cubs, including knowledge of early medical issues and their treatment and determination of key problems during first 4 months of growth. A total of 35 (09Male:17 Females) are housed in Lion safari of 1.5 acres. A total of 04 mothers were found entirely abandoned to 05 newborns (03 males & 02 females). Among these mothers two were delivered first time in open area of safari. The recorded factors for neglected attitude of lionesses were overcrowding, disturbance at birth and first time pregnancy of mother. The hand raising period was divided into four phases on the basis of feeding practices of every cub. Phase-I, just formula milk (Royal Canin) for 1-45 days; Phase-II, formula milk and chicken 250 gm for 46-75 days; Phase-III, formula milk was decreased and beef mince 150gm supplemented with chicken 250gm for 76-90 days; Phase-IV formula milk was replaced by dairy milk. The cubs were given chicken 250gm and 300gm beef for 91-120 days along with 03 feed of dairy milk. It was noticed that birth weight of male cubs (n=3) was 10.6% higher than female cubs (n=2). As per weight gain was concerned during Phases-I it was slow and while in Phase-III & IV it was fast, mainly due to protein supplementation. Among the medical problems the constipation was remarkably very high with 80-90%. The 02 males' cubs were suffering from this problem till six months of birth while in 01 male and 03 females it was cured within first three months of birth. Among other health issues diarrhea



was 5%, hypothermia was 2% blindness was 1% and hind quarter weakness was 2%. All ailments were recovered after proper medication and preventive measures within first three months especially by reduction of formula milk in diet and daily walk. All of five successfully hand reared cubs were shifted to 03 sub- adult lion's enclosure. These cubs were adjusted to new environment very easily and showed the tameness.

WCO09:

Black-Legged Kittiwake (*Rissa Tridactyla*) in Karakoram: Record on Vagrancy

Zahid Iqbal Khan, Fakhar-i-Abbas*, Madeeha Manzoor and Afsar Mian
Centre for Bioresource Research (CBR), Islamabad, Pakistan
fakharabbas@hotmail.com

ABSTRACT:

Birds are major important component of biodiversity. They provide a vital aspect of nature's beauty and completes important ecological role in ecosystem. A Black-legged Kittiwake (*Rissa tridactyla*; BLK) circumpolar shore bird was recorded on the Borith Lake (36°25'54.31"N, 74°51'44.09"E), Gulmit (Hunza valley), Gilgit-Balistan. The sighting area is 4,000-5,000 km away from the gull family bird's eastern or western normal habitat and 2000 km from its last report few years ago and 1500 km from nearest seashore. This report discusses the possible reasons and so far reported vagrancy of this bird. It will also help in the conservational strategies made for biodiversity conservation.



MICROBIOLOGY (MIC)

**MIC 01:****Characterization of *bla*_{OXA-51} gene from *Acinetobacter baumannii***Amina Irfan¹ and Muhammad Tariq Zahid²¹Department of Zoology, New Campus, University of the Punjab, Lahore²Department of Zoology, Government College University Lahore
tzahid_malik@yahoo.com**ABSTRACT:**

Acinetobacter baumannii are coccobacillus, non-motile, obligate aerobic well known for their ability to develop resistance against antibiotics. They are involved in causing colonization and infections in immunocompromised persons. According to WHO recommendations it is at top in the list of bacteria that urgently require new antibiotics. This pathogen have continuously increasing resistance against antibiotics. Attainment of carbapenemases, changes in outer membrane proteins (OMPs), penicillin binding proteins (PBPs), efflux pumps, outer membrane vesicles (OMVs), phospholipases, permeability defects and modification of target sites are the various antibiotic resistance mechanisms. In the current study one environmental isolate and two clinical isolates of *Acinetobacter baumannii* were studied for antibiotic resistance. Biochemical characterization of these isolates showed they are catalase positive, gram negative, non-endospore forming, non-motile, obligate aerobes. These isolates showed maximum growth at 45 °C. Growth curves for these isolates were determined on optimum temperature. Antibiotic resistance against various antibiotics was detected by using disk diffusion method. This showed that the clinical isolates were more resistant to different classes of antibiotics as compared to the environmental isolate. The environmental isolate (1005) was susceptible to all the antibiotics except ampicillin and tetracycline antibiotics. The clinical isolate (3242) was resistant to all antibiotics except polymyxin B antibiotic whereas clinical isolate (3342Y) was resistant to all antibiotics except polymyxin B and imipenem. In *A. baumannii*, *bla*_{OXA-51} gene is most frequently found OXA carbapenemase. This gene is a genetic marker for the detection of these bacteria. Environmental and clinical isolates were tested for the presence of this gene by PCR in which a 353 bp fragment of *bla*_{OXA-51} gene was amplified and then sequencing of amplified product. This gene was present in both the clinical and environmental isolates.

MIC 02:**ISOLATION, IDENTIFICATION AND CHARACTERIZATION OF MICROBE PRODUCING BETA-GALACTOSIDASE FROM SOIL SAMPLE**

Farheen Aslam and Ayesha Anwar

Department of Biotechnology, Lahore College for Women University, Lahore;
farheenpu@gmail.com**ABSTRACT:**

β Galactosidases are hydrolases found in microorganisms such as fungi, bacteria and yeasts; plants, animals cells, and from recombinant sources. The enzyme has two main applications; the removal of lactose from milk products for lactose intolerant people and the production of galactosylated products. In this study it was aimed to isolate and optimize Beta-galactosidase producing microbe from soil sample collected near a dairy farm. For screening X-gal (5-bromo-4-chloro-3-indoyl-β-d-galactopyranoside), a chromogenic substrate essential as indicator of glycosidase activity by giving it blue color, is used. Maximum production of enzyme was obtained with pH at 7 and temperature at 37°C. Other factors maximum production were observed with sucrose, ammonium sulphate, magnesium sulphate and wheat flour. In enzyme assay ONPG (Ortho-Nitrophenyl-β-galactoside) was used as substrate. These results reveal a *Lactobacillus* spp. producing β-galactosidase obtained from soil sample with favorable characteristics has vital role in food industries.

**MIC03:****Antibacterial and larvicidal activity of potent actinomycetes isolated from soil**

Noor Muhammad and *Iram Liaquat

Department of Zoology, GC University, Lahore-54000, Pakistan.

iramliq@hotmail.com**ABSTRACT:**

The present study aimed to isolate potent actinomycetes from soil samples which were collected from Dist. Kasur, Punjab, Pakistan. Total, 14 actinobacterial strains were isolated from six samples. These strains were subjected to morphological, biochemical and differential media characterization. The antibiotic susceptibility test of all the isolated strain was done using disc diffusion method. The actinobacterial strains AB1, AB7, GB1, GB7 and GB8 showed resistance against 04 antibiotics (ampicillin, rifamycin, lincomycin and erythromycin) and were subjected to screen for potent antimicrobial compounds following primary and secondary screening methods. The preliminary screening was done against *E. coli*, *P. aeruginosa*, *K. pneumonia*, *B. subtilis* and *B. licheniformis* using standard cross streak method. In primary screening, actinobacterial strain AB7 showed highest zone of inhibition (ZI) (24 and 27 mm) against *B. subtilis* and *B. licheniformis* respectively. Actinobacterial strain GB8 and GB7 showed highest ZI (19 mm) against *E. coli*. All the isolated strains showed relatively small ZI against *K. pneumonia* and *P. aeruginosa*. Ethyl acetate extraction was performed in order to isolate bioactive compounds from potent 05 strains. The ethyl acetate crude extracts were dissolved in Dimethyl sulfoxide (DMSO) and used to perform secondary screening and larvicidal activity. Using agar well diffusion method, it was observed that actinobacterial strain GB6 showed highest ZI (14 mm) against *P. aeruginosa*. Other strains (AB1, AB7, GB7 and GB8) also showed excellent zone of inhibition (12-10 mm) against *P. aeruginosa*. The ZI against *E. coli*, *B. subtilis* and *B. licheniformis* was in the range of 6-11 mm. The minimum inhibitory concentration (MIC) of these 05 actinobacterial strains was in the range of 1.3 to 3.5 mgmL⁻¹ and minimum bactericidal concentration (MBC) was in the range of 1.9 to 4 mgmL⁻¹ against the selected pathogens. The actinobacterial strain AB7, AB1 and GB6 showed 100% mortality and GB7 and GB8 showed 83% and 68% mortality at 1000ppm against *Anopheles* 3rd instar larvae. These findings indicated that actinobacterial isolates have the ability to produce bioactive compounds with potent activity against Gram positive and negative pathogenic bacteria and have the ability to kill mosquitoes. This could be a good source of novel antibiotics and natural insecticides.

MIC 04:**Seroprevalence and associated risk factors of leptospira among livestock farmers in flood affected areas of Pakistan**

Muhammad Ijaz^{1*}, Awais Ghaffar¹, Ahmad Ali¹, Muhammad Umair Aziz¹, Hammad Nayyar Ghauri¹, Arslan Ahmed¹, Muhammad Naveed¹, Yasir Nawab¹, Muhammad Umar Javed¹ and Muhammad Zeeshan Zafar²

¹Department of Clinical Medicine and Surgery, Faculty of Veterinary Science, University of Veterinary and Animal Sciences, Lahore (54600), Pakistan

²Department of Microbiology, Faculty of Veterinary Science, University of Veterinary and Animal Sciences, Lahore (54600), Pakistan

mijaz@uvas.edu.pk

ABSTRACT:

Livestock farmers are highly vulnerable to be exposed to *leptospira* infection due to their intense animal contact. This study was planned to investigate sero-prevalence and associated risk factors of human antileptospiral antibodies in flood affected heavily livestock populated southern Punjab districts, Rajanpur and Muzaffargarh of Pakistan. A total of 192 serum samples from humans directly involved with livestock were randomly collected from the study area, and were put to screening of



anti-leptospiral antibodies using commercial human Anti-Leptospira IgG kit. The information regarding disease determinants were recorded on a predesigned questionnaire and were analyzed by logistic regression model on SPSS. The overall seroprevalence of *leptospira* in humans was 17.19%, while 18.75% (95% CI=11.50-28.00) in Rajanpur and 15.62% (95% CI=09.02-24.46) in Muzaffargarh district, but the difference was statistically not significant. A univariable analysis followed by a multivariable logistic regression model using a backward stepwise selection approach showed that older age ($P<0.001$), living with animals in crowded area ($P<0.001$, OR=67.25), poor hygienic protocol during handling of diseased animals ($P<0.001$, OR=30.01), not having any professional training ($P=0.002$, OR=16.61), treating animals themselves instead of veterinary staff ($P=0.001$, OR=9.28) and having a history of any liver problem ($P<0.03$, OR=6.31) were the key risk factors associated with the *leptospira* infection in humans. It can be concluded that *leptospira* is prevalent in study districts and many risk factors can increase the risk of getting leptospiral infection in humans that may lead to leptospirosis. Hence, there is a need to develop a comprehensive control program to minimize the losses associated with leptospirosis.

MIC 05:

Antimicrobial Activity of Different Nanoparticles Against Microflora of Dental Plaque

Neelma Munir, Rimsha Sajid, Mahrose Nawaz and Shagufta Naz
Department of Biotechnology,
Lahore College for Women University, Lahore, Pakistan
neelma.munir@yahoo.com

ABSTRACT:

With the increased use of antibiotics as antimicrobial agents against bacteria, a number of bacteria are becoming antibiotic resistant. This problem led the development of novel technologies other than antibiotics. One of these technologies is nanotechnology that is gaining the attention of scientists worldwide. This study focus on the antimicrobial effect of Mn- and Ag doped zinc oxide nanoparticles on the microbes isolated from dental plaque. The results showed that nanoparticles have effective antimicrobial activity against the tested organisms. Silver doped zinc oxide NP and manganese doped zinc oxide NP were generally most effective against *Staphylococcus. epidermidis* with inhibition zones of $14\pm 0.5\text{mm}$ and $13.66\pm 0.577\text{mm}$ for 50mg/1000ml concentration and $15\pm 0.5\text{mm}$ and $15.66\pm 0.577\text{mm}$ respectively. *Streptococcus sp.* showed highest zones of inhibition when nanoparticles were used in higher concentration i.e. 100mg/1000ml while *Bacillus sp.* showed least zones of inhibition with both nanoparticles in all concentrations. Moreover, silver doped zinc oxide nanoparticles have generally more antimicrobial potential than manganese doped zinc oxide nanoparticles.

MIC 06:

Study of Microbial Isolation from Soil of Leguminous Plants Collected from Pattoki

Zerish Kiran Jamil, Mehwish Khan, Rana Naeem, Fozia Naz, Iqra Shahryar, Mominah Jameel, Noor Fatima and Minal Shazad
Islamia College Cooper Road, Lahore
kiran.jamil.246@gmail.com

ABSTRACT:

Soil is the region where most of the physical, biological and biochemical reactions related to decomposition of organic matter, degradation, cycling of nutrients, mineral and metal transformation occur. The soil environment with diverse microbial population responsible for nitrogen fixation, decomposition and mineral transformation which aid in maintaining a sustainable soil environment. All nutrients that plants absorb have to pass a region of intense interactions between roots, microorganisms and animals, termed the rhizosphere leguminous plants belong to family *Fabaceae*



and includes peas, lentils, beans, chickpeas and soybeans etc. Some groups of bacteria grow in roots of legumes which aid in crop rotation. The study aims are to isolation, identification and characterization of nitrogen fixing bacteria. Determine prevalence of high number of *Rhizobium* in soil samples of leguminous plants. The observational and prospective study was conducted on soil samples collected from Pattoki pea, soybean, chickpea, lentil and beans field in the period of two days and examined from 1st March to 30th May 2019. For prevention of contamination, glass wares (such as conical flask, test tube, pipette, petri dish etc) was washed and sterilized before taking bacterial sample. Media are the synthetic mixtures of bacto-peptone 10g, NaCl 5g, Yeast extract Powder 0.5g in a liter of distilled water, Agar powder of 105g was added in 100 ml for solidification of liquid medium. These were used for culturing the bacteria in glass- tubes and in petri dishes. *E.coli*, *Rhizobium*, *Pseudomonas* and *Proteus* specie of bacteria were identified in soil samples. *E.coli* obtained in highest quantity (35%) then *Rhizobium* (33%), *Pseudomonas* (28%) and *Proteus species* (4%). Their presence confirm by Catalase, Oxidase, Voges- Proskauer and Indole tests. The biochemical tests performed on the isolates (*Rhizobium*, *E.coli*, *Proteus* and *Pseudomonas*) showed that most were positive for Catalase, Oxidase, Voges – Proskauer and Indole tests. Sugar tests positive during isolation and characterization of *Rhizobium meliloti* on most of leguminous plant roots. All identified species are motile and gram negative rods in nature. *Pseudomonas* and *Rhizobium* are aerobic while *Proteus* and *E.coli* are facultative anaerobe and aerobe respectively. Colony morphology of *E. coli* on blood agar was slightly convex, grey and moist with hemolytic property of some strains. *Proteus* showed swarming over entire surface and the ripples on water on blood agar. The colonies of *Pseudomonas* were observed to slightly opaque colony while showed large, flat, spreading colonies with clear zones of hemolysis. *Rhizobium* with mucoid colony characteristics has morphology on blood agar was non hemolytic and on MecConkey agar was non lactose fermenting. Complex microbial and faunal interactions with plant roots accompanied and shaped the evolution of land plants. In future we recommend using these beneficial bacteria instead of organic or synthetic fertilizers. *Rhizobium* is an important microorganism for the environment because of its nitrogen-fixing ability when in symbiotic relationship with plants (mainly legumes). This study confirmed that the root nodules of leguminous plant harbour the nitrogen-fixing bacterium- *Rhizobium*. It also showed that leguminous plants when inoculated with *Rhizobium* isolates perform better. This organism will greatly enhance agricultural production, if they are often used to inoculate legume plants, thereby reducing the environmental threat of synthetic nitrogen fertilizers.

MIC 07:

Mosquitocidal Acitivity of Cry4A Protein from Local Isolates of *Bacillus thuringiensis*

Tehmina Kanwal and Dilara Abbas Bukhari
Department of Zoology, GC University, Lahore, Pakistan
tehminka.kanwal18@gmail.com

ABSTRACT:

:Synthetic pesticides have been widely used to control insects and crop pests which often negatively affect humans in a variety of ways. These chemicals target a wide spectrum of organisms. However, they cause insect resistance, kill beneficial insects when used improperly. Therefore, the need of alternate, more effective and environment-friendly control agents become imperative. For this, a total of twenty five soil samples were collected from different ecological habitats of Pakistan. Two approaches were used and applied for the isolation of *Bacillus thuringiensis*: sodium acetate selection and heat shock method. These methods yielded 120 morphologically distinct B.t. like colonies on LB agar medium. Gram staining, endospore and crystal staining yielded 53 *Bacillus* species which on biochemical characterization, yielded 30 *Bacillus thuringiensis* isolates. Eight isolates were found positive on the basis of ribotyping of conserved region (550bp) 16S rDNA whereas the full-length (1.6Kb) 16S rDNA ribotyping demonstrated maximum homology of six isolates with *Bacillus thuringiensis* serovar israelensis (GCU-DAB-TK-04), *Bacillus thuringiensis* serovar chinensis (GCU-DAB-TK-06), *Bacillus thuringiensis* serovar kurstaki (GCU-DAB-TK-09), *Bacillus thuringiensis* serovar Al Hakam (GCU-DAB-TK-11), *Bacillus thuringiensis* serovar coreanensis (GCU-DAB-TK-



12) and *Bacillus thuringiensis* serovar indiana (GCU-DAB-TK-13). Four of the isolates were found positive for cry4A gene. All B.t. isolates showed typical growth curve at 37°C, pH 07 and inoculum size of 10% of the total bacterial culture. Bioassays of B.t. spores of isolates positive for cry4A gene against 3rd instar larvae of *Aedes aegypti* and *Culex quinquefasciatus* showed that four B.t. isolates (GCU-DAB-TK-04, GCU-DABTK-11, GCU-DAB-TK-12, GCU-DAB-TK-13) were most toxic to the target insects. Among these the most toxic B.t. isolate, GCU-DAB-TK-04 (LC50=482µg/ml) was isolated from moist and sticky soil from field area, Kasur, GCU-DAB-TK-11 (LC50=570µg/ml) was from dry soil from road side sethi colony, Gujranwala, GCU-DAB-TK-13 (LC50=621µg/ml) was isolated from dry and sandy soil from field area cant. road, Lahore and GCU-DAB-TK-12 (LC50=745µg/ml) was found to be least toxic and isolated from canal area, Gujranwala. To conclude, out of six local isolates of *Bacillus thuringiensis*, four were found significantly toxic to 3rd instar larvae of *Aedes aegypti* and *Culex quinquefasciatus* and harbored cry4A gene. These isolates have the potential to develop into a biopesticidal formulation for the control of different species of mosquitoes.

MIC 08:

Assessment of antimicrobial activity of Sericin and Sericin AgNO₃ nanoparticles against textile degrading microbes

Rabia Mushtaq, Hafiz Muhammad Tahir, Shaukat Ali*, Muhammad Summer
Department of Zoology, GC University Lahore, 54000, Pakistan
shaukatali134@yahoo.com

ABSTRACT:

Sericin as a biological material was extracted from raw silk by boiling in hot water and AgNPs was dispersed in its solution. The prepared finishing agents with and without polycarboxylic acid cross-linking agents were treated on cotton fabric using pad-dry-cure technique. Presence of sericin, AgNPs, and cross-linking agents on cotton fabric was confirmed by UV visible spectrophotometry. The antibacterial activity and the durability of modified cotton fabrics were investigated against one Gram-positive bacterium (*Staphylococcus aureus*) and one Gram-negative bacterium (*Escherichia coli*). The finishing treatment on the cotton fabric was effective against both *S. aureus* and *E. coli*. Sericin-AgNPs showed maximum inhibitory activity (14.8±3mm) against *Staphylococcus aureus* and (14.3±4mm) against *Escherichia coli*. The fabrics treated with AgNPs were possessed more inhibitory activity (20±3mm) against bacteria as compared to sericin (3mm±0.3mm) and also considerably improved with given nanocomposite (15±4mm). The antibacterial activity of treated fabrics with cross linking agents has not been considerably changed after 20 launderings.

MIC 09:

Comparison of polyhydroxyalkanoate and biosurfactant coproduction in produced water bacteria

Rafeya Sohail and Nazia Jamil

¹Department of Microbiology and Molecular Genetics (MMG), University of the Punjab, Quaid e Azam Campus, Lahore-54590, Pakistan
rafeyasohail@gmail.com

ABSTRACT:

Produced water, a waste of oil fields, serves as a habitat for many extremophiles including polyhydroxyalkanoate and biosurfactant producers. In this study, the ability of *Bacillus* and *Pseudomonas* species to coproduce polyhydroxyalkanoates (PHA) and biosurfactant (BS) was evaluated. Initial screening of bacterial strains isolated from potwar oil fields showed that 46% and 31% strains were producers for PHA and BS respectively. Strains with desired traits were identified



through 16S rRNA gene sequencing as *Bacillus subtilis* (MH142143), *Pseudomonas aeruginosa* (MH142144), *Bacillus tequilensis* (MH142145) and *Bacillus safensis* (MH142146). Production statistics were mapped out using two different culture media, each best suited for PHA and BS production, respectively. Effect of culture media composition on biomass, PHA and BS production was evaluated. Highest biomass was calculated on PHA detection media. Results indicated PHA production is favored by short incubation time while long incubation time favored BS production. Highest production of PHA (43%) was observed, after 24 to 48 hour cultivation, by *Bacillus tequilensis*. While highest BS production (49%) was observed, after 48 to 72 hour cultivation, by *Pseudomonas aeruginosa*. Highest simultaneous production of PHA (35%) and BS (30%) was shown by *Bacillus tequilensis*. Molecular compositions of extracted PHA and BS were found similar to polyhydroxybutyrate and rhamnolipids by Fourier Transform Infrared Spectroscopy (FT-IR) and Thin Layer Chromatography (TLC) respectively.

MIC 10:

***Staphylococcus sciuri* A-HS1, a metal resistant bacterium, isolated from untreated tannery effluent**

Abdul Rehman and Amina Elahi

Department of Microbiology and Molecular Genetics, University of the Punjab, New Campus,
Lahore 54590, Pakistan
rehman_mmg@yahoo.com

ABSTRACT:

A chromium-resistant bacterium was isolated indigenously from tannery effluent and identified as *Staphylococcus sciuri*. The optimum growth was observed at 37°C and pH 7. *S. sciuri* was able to resist Cr⁶⁺ (25 mM) and other heavy metals such as As²⁺ (19 mM), Pb²⁺ (18.5 mM), Zn²⁺ (17 mM), Cu²⁺ (2.5mM), Cd²⁺ (3 mM), and Ni²⁺ (1.5 mM). Biochemical characterization of chromate reductase enzyme revealed its optimal pH as 8.0 and temperature as 40°C. The enzyme activity was stimulated only by Mg²⁺ among other heavy metals tested. *S. sciuri* showed chromium biosorption proficiency (q) after 2, 4, 6 and 8 days as 42, 73, 85 and 31 mM/g, respectively. Cr⁶⁺ did not stimulate activities of APOX, SOD and CAT significantly, however, only POX showed marked production (86%). Also, enhanced production of glutathione and other non-protein thiols significantly combat metal generated oxidative stress. Pilot study verified that *S. sciuri* was able to remove 93% Cr⁶⁺ from tannery effluent within 6 days of incubation. Thus, *S. sciuri* could act as a potential candidate for the bioremediation of hexavalent chromium contaminated environmental sites.

MIC11:

Characterization of lytic enzyme producing bacteria and their antagonistic potential against phytopathogenic fungi of Tomato (*Lycopersicon esculentum*)

Muhammad Saqib Malik, Dr. Muhammad Anees, Shabeer Haider

Department of Microbiology, Kohat University of science and technology (KUST) Kohat.
malicksaqib@gmail.com

ABSTRACT:

Tomato (*Lycopersicon esculentum*) is one of the most popular and significant commercial crops in Pakistan, grown over an area of about 63,200 ha. A number of pathogens including fungi, bacteria, and nematodes cause diseases in plants. The root rot, early blight, late blight, fruit rot, damping off and other fungal diseases of tomato (*Cycopersicon Esculentum*.L) caused by different phytopathogen i.e *Fusarium spp*, *Rhizoctania solani*, *Collectotrichum* *Aspergillus Spp* , *Phytopathotra spp* , *Alternaria spp.*, *Botrytis cinerea*, *Cladosporium fulvum*, *Colletotrichum spp*, *Sclerotinia spp* and *Verticillium spp* are one of the most important limiting factors to production of



tomato reducing yield up to 80% in Pakistan. In this study, isolation of chitinolytic bacterial strains, screening of the chitinolytic bacterial strains for antifungal activity and identification of the efficient chitinolytic antifungal strains were taken place. Bacterial isolates from rhizosphere soil of tomato field, identified are as different *Bacillus spp* i.e *Bacillus cereus*, *Bacillus subtilis*, *Bacillus cereus* and *Bacillus albus* by 16S rRNA analysis and demonstrated its antifungal activity against various plant pathogens including *Fusarium spp*, *Rhizoctania solani*, *Collectotrichum*, *Aspergillus Spp* and *Fusarium Graminium* (Isolated from infected tomato plant parts) which were identified microscopically as well as molecularly. This work presents the evaluation of the capacity of *Bacillus spp* to protect the tomato plants against *Fusarium spp* and *Rhizoctania solani* and establishes its role as a biocontrol agent. *Bacillus spp* produced lytic enzymes such as chitinase, cellulase, pectinase and protease as well as produce volatile compounds which exhibit good antagonistic activity against *Aspergillus* and other fungal *spp*. In addition, out of four strain crude extract from *bacillus albus* N35-10-2 exhibited good destructive activity toward *Fusarium spp* and *Rhizoctania solani* hyphae. In the pot trial, results showed the protective effect of *bacillus albus* and *bacillus cereus* against tomato from *Fusarium spp* and *Rhizoctania solani*. Application of *bacillus albus* culture suspension out of control 30 % of diseases caused by *Rhizoctania solani* and 40 % disease controlled by *Fusarium spp* as compared to positive and negative control, resulting in greater protection to tomato plants against both fungal infestation as compared to other *bacillus spp*. Therefore, our results indicated a clear potential of *bacillus spp* to be used for biocontrol of root rot and early blight disease caused by *Rhizoctania solani* and *Fusarium spp* in tomato.

MIC12:

Enhanced microbial α -amylase production through submerged fermentation technology

Muhammad Adeel Farooq, Shaukat Ali, Ali Hassan, Hafiz Muhammad Tahir
Department of Zoology, GC University, Lahore, Pakistan

ABSTRACT

α -amylase is an imperative enzyme that plays a vital role in research and various industrial fields. It can be produced by submerged fermentation (SmF) and Solid substrate fermentation (SSF). Submerged fermentation is more efficacious process; therefore, it is used to synthesize the α -amylase at industrial level. Due to its large demand, in current studies, α -amylase production was enhanced by utilizing economically less expensive substrates e.g. soybean meal, wheat bran, apple peels, rice husk and cucumber peels. For biosynthesis of α -amylase by submerged fermentation, the mutant strains of *Bacillus subtilis* (BSAA-5, BSAA-10, BSAA-15, BSAA-20, BSAA-25, BSAA-30, BSAA-35 and BSAA-40) and *Bacillus licheniformis* (BLAA-5, BLAA-10, BLAA-15, BLAA-20, BLAA-25, BLAA-30, BLAA-35 and BLAA-40) were prepared by the exposure of bacteria to UV radiation for 5, 10, 15, 20, 25, 30, 35 and 40 minutes, respectively. For the optimization of the synthesis of α -amylase, the fermentation media was incubated at different temperatures (33°C, 37°C, 41°C and 45°C) and pH values (pH5, pH6, pH7, pH8 and pH9). For the characterization of α -amylase, the activity of amylase was determined at different temperatures (31°C, 34°C, 37°C, 40°C and 43°C), pH values (pH4, pH5, pH6, pH7, pH8, pH9 and pH10) and with different starch solution concentrations (0.50%, 1.0%, 1.50% and 2.0%). BSAA-25 and BLAA-25 mutant strains showed optimum synthesis of α -amylase 331.4±6.9 and 310.8±11.3, respectively, at 37°C and pH7 for 48 hours with wheat bran substrate due to its high nutritious composition. Optimum activity of α -amylase was obtained at 40°C, pH7 and with 1% of starch solution by *B. subtilis* BSAA-25 (338.6±11.0) and *B. licheniformis* BLAA-25 (326.8±6.4). *B. subtilis* BSAA-25 mutant strain showed more biosynthesis of α -amylase as compared to *Bacillus licheniformis*. Hence, the synthesis of α -amylase was enhanced by producing the mutants and utilizing commercially cheap substrates.



MOLECULAR BIOLOGY AND GENETICS (MBG)

**MBG 01:****Differential opening of mPTP in the cortex and medulla of kidney is not linked to MCU expression**

Hajra Fayyaz, Mehvish Batool, Muhammad Rizwan Alam
Department of Biochemistry, Quaid-i-Azam University, Islamabad, Pakistan
mralam@qau.edu.pk

ABSTRACT:

End-Stage Renal Failure, now a days is considered as an upcoming global health problem. The renal failure is manifested by a number of risk factors e.g. acute kidney injury (AKI), chronic kidney disease (CKD) and diabetic nephropathy (DN) etc. One of the key events in kidney pathology is mitochondrial dysfunction which is mainly because of a high cellular oxidative stress often associated with mitochondrial calcium overload. The supra-physiological increase in matrix calcium is accomplished by a recently discovered mitochondrial calcium uniporter (MCU) which may trigger the opening of the so-called mitochondrial permeability transition pore (mPTP). This may lead to a consequential depletion of ATP, membrane depolarization, mitochondrial swelling and ultimately cell death. Although the involvement of mPTP in kidney disease has been well established however, the differential association of mitochondrial calcium accumulation with mPTP in the cortex and medulla of the kidney remains poorly explored. Therefore we have design a research project with an aim to evaluate the isolated mitochondria from the cortex and medulla of kidney for their susceptibility to mPTP opening and to determine its association with expression of MCU protein. For this purpose, the Ca^{2+} induced mPTP opening was measured by using a spectrophotometric time lapse assay. Further, the level of MCU was quantified by western blot analysis for confirming its effect on mPTP opening. Additionally, the data of MCU was correlated with the pore opening. Our results demonstrated that cortical mitochondria showed more mPTP opening as compared to medulla but no significant results were obtained in MCU level. For inspecting the role of MCU in mPTP opening, we also performed another experiment by blocking the MCU channel with Mitoxantrone; a novel MCU inhibitor. But unexpectedly, by blocking the channel the inhibitory effect was more in medulla as compared to cortex. In summary, our data proposes that the mitochondria from the different sites of kidney display different mPTP opening but the level of MCU was unchanged which shows that there were probably other reasons responsible for this opening.

MBG 02:**Permeability Transition Pore Opening in Mice Cerebral Hemispheres Correlates with Altered EMRE Expression**

Mehvish Batool, Hajra Fayyaz, Muhammad Rizwan Alam
Department of Biochemistry, Quaid-i-Azam University, Islamabad, Pakistan
mralam@qau.edu.pk

ABSTRACT:

Mitochondrial permeability transition pore (mPTP) the high conductance channel in the inner mitochondrial membrane is involved mainly in death of cells due to calcium accumulation. The opening of the clogged brain artery referred to as reperfusion may lead to the so-called ischemia reperfusion injury (I/RI) which undermines the beneficial effects of reperfusion. I/RI triggers the opening of a channel in the inner mitochondrial membrane known as mPTP. This channel causes the mitochondrial swelling leading to apoptotic or necrotic neuronal death. The entry of calcium into mitochondria by mitochondrial calcium uniporter (MCU) is one of the major stimulators of mPTP. But, the association of MCU and its component with mPTP opening in the right and left hemisphere of the brain remains poorly explored. Therefore, we designed this study to link the level of MCU to the calcium-dependent mPTP opening in the cerebral hemispheres of BALB/c albino mice. For this purpose, mitochondrial suspensions from mice cerebral hemispheres were prepared, mitochondrial



viability was determined and mPTP opening was measured using a spectrophotometric time-lapsed assay. Furthermore, the level of MCU components was also assessed by quantitative real time PCR (q-RT-PCR) and western blot analysis. Interestingly, our results highlight the fact that left cerebral hemisphere experienced less mPTP opening as a result of exogenous addition of calcium in the isolated brain mitochondria. Our data further demonstrate that all the components of MCU (MCU, MCUb, MICU1, MICU2 and EMRE) are expressed in both the cerebral hemispheres. Notably, the mRNA level of EMRE, a regulator of MCU, tended to be low in the left cerebral hemisphere which goes in line with the reduced mPTP opening of this part of brain. However, there was no considerable difference in the mRNA level of other MCU components. Intriguingly the protein level of MCU also appeared to be reduced in the left hemisphere which corroborates with the results of EMRE expression and mPTP opening. In brief the findings of this study suggest that mitochondria isolated from the two cerebral hemispheres behave differently in mPTP opening and this finding may be contributed to the reduced expression of mitochondrial calcium transport proteins.

MBG 03:

Pathophysiological Role of Glucocorticoid Receptor Ligands In CCl₄ Induced Nephrotoxicity In Mice

Bilal Aslam^{1*}, Hafiza Sidra Aslam¹, Faqir Muhammad¹, Junaid Ali Khan¹, Muhammad Naeem Faisal¹, Asif Hussain¹

¹*Institute of Pharmacy, Physiology and Pharmacology, University of Agriculture, Faisalabad-38040, Pakistan*

ABSTRACT:

The chronic renal disease occurs due to increased oxidative stress markers in plasma. In oxidative stress, the level of antioxidant enzymes is reduced like catalase, glutathione reductase and superoxide dismutase (SOD). CCl₄ induced nephrotoxicity to cause an increase in production of reactive oxygen species which causes lipid peroxidation and ultimately renal fibrosis. Glucocorticoid receptors (GR) are involved in suppression of inflammation in the kidney. Dexamethasone is a synthetic glucocorticoid and anti-inflammatory drug. Glucocorticoid receptor antagonist mifepristone (RU486) causes inhibition of GR due to which cortisol and adrenocorticotrophic hormone (ACTH) level increases. The goal of the research is to assess the role of GR agonist dexamethasone and GR antagonist mifepristone (RU486) on CCl₄ induced nephrotoxicity. In this study, 25 healthy albino mice were divided into 5 groups (n=5). CCl₄ at a dose rate of 750ul/kg in 100ul sesame oil (i.p.) was given to all groups except Normal control. Group-1 animals were taken as normal control group (Normal saline), Group-2 received CCl₄, Group-3 received CCl₄ and dexamethasone (2mg/kg, i.p.), Group-4 received CCl₄ and mifepristone (25mg/kg, i.p.) and Group-5 animals received CCl₄, dexamethasone (2mg/kg, i.p.) and mifepristone (25mg/kg, i.p.). Blood samples were taken at 0h, 24h and 48h of study. Histopathological, biochemical and antioxidant parameters were evaluated after the 3rd day of treatment. Serum creatinine, urea, BUN, globulin and total protein levels were significantly ($p \leq 0.05$) increased in CCl₄ treated group while their levels decreased by GR ligand. Albumin level was significantly ($p \leq 0.05$) decreased in CCl₄ treated group while its level increased by GR ligand. CCl₄ treated group showed marked tubular degeneration and inflammatory infiltration was high. GR ligand treated groups showed recovery towards the normal tubular structure. For statistical analysis, results were subjected to one-way analysis of variance (ANOVA) and Post-hoc Duncan's Multiple Range test (DMR).

**MBG 04:****Exocyst-dependent trafficking of neurotransmitter transporters and their correlation with disease.**Hafiz Muhammad Mazhar Asjad¹, Sonja Sucic², Michael Freissmuth²¹Department of Pharmacy, Forman Christian College University, Lahore.²Institute of Pharmacology, Centre of Physiology and Pharmacology, Medical University of Vienna, Austria

mazharasjad@fccollege.edu.pk

ABSTRACT:

The transfer of material between organelles is mediated by carrier vesicles. Each vesicle transport reaction can be divided into four essential steps: vesicle budding, transport, tethering, and fusion. The exocyst is a multiprotein complex required by many membrane proteins for delivery to and insertion into the plasma membrane. Uptake through the neurotransmitter transporters for example dopamine transporter (DAT) represents the primary mechanism used to terminate dopaminergic transmission in the brain. However, little is known about the specialized trafficking of DAT towards the target membrane. DAT requires an intact C-terminal PDZ-binding motif to reach the cell surface, whereas the closely related serotonin transporter SERT does not. Here, we tested the hypothesis that DAT requires the exocyst for reaching the cell surface. HEK 293 or CAD cells were transiently co-transfected with plasmids encoding the wild-type dopamine transporter (DAT) and serotonin transporter (SERT) along with different components of the exocyst, i. e. Exo70, Sec6 and Sec8 using jetPRIME (Polyplus). Radioligand uptake, confocal laser scanning microscopy and immunoprecipitation experiments were performed 48 h after transfection to study the effect of exocyst components on trafficking of DAT and SERT. DAT relied on the exocyst to reach the cell surface. Surprisingly, SERT did not require the exocyst complex to reach the cell surface, regardless of whether the experiments were performed in HEK 293 cells (a cell line of fibroblast origin) or in CAD cells (a Cath.a-cell-derived line of neuronal origin) membrane. We found that three components of the exocyst complex, Sec6, Sec8 and Exo70, separately control trafficking of DAT. Immunoblots also showed the effect of exocyst components on trafficking of DAT as compared to SERT as control. The exocyst mediates DAT targeting to the presynaptic membrane. Identification of proteins as DAT-interactors along with the molecular bases and physiological significance of such interactions will result in a better understanding the role DAT plays in regulating dopamine homeostasis in the brain.

MBG 05:**Role of Monocyte Chemoattractant Protein -1 with type II diabetic foot ulcer in Pakistan**

Rasheeda Bashir, Sadaf Bashir, Shagufta Naz

Department of Biotechnology, Lahore College for Women University, Lahore, Pakistan

rashidasbs@yahoo.com

ABSTRACT:

Type-II diabetes mellitus is a heterogeneous and multifactorial metabolic disorder that is characterized by insulin resistance. It causes many complications such as albuminuria, atherosclerosis, cardiovascular disease, diabetic retinopathy and foot ulcer. Genomic studies have identified many genes that can be associated with type II diabetic foot ulcer such as heat shock protein (*HSP 70*), vascular endothelial growth factor (*VEGF* gene), tumor necrosis factor (*TNF*) and *SDF-1*, *ITLN* and *MCP-1* gene (*CCL2*) gene. Association studies also suggest that the involvement of *MCP-1* (*CCL2*) gene is responsible for type II diabetic foot ulcer. *MCP-1*, a pro-inflammatory cytokine, play an important role in inflammatory process. In present study, evaluated the association of *MCP-1* gene rs1024611 polymorphism with risk and clinical characteristics of type II diabetic foot ulcer. Blood samples of 50 individuals collected from different hospitals of Lahore, (Punjab). *MCP-1* gene was sequenced by Sanger sequencing. In DFU patients' genotypic frequencies of TT, CT and CC allele were 32%, 46% and 20% respectively and in type II diabetic patients TT, CT and CC allele



were 45%, 29% and 25% respectively. Individuals having TT and CT genotypes shows significantly higher susceptibility to diabetic foot ulcer. It is concluded that significant association of *MCP-1* rs1024611 SNP with type II diabetic foot ulcer patients in Pakistani population and this will be helpful for pre-diagnose of type II diabetic foot ulcer. Add some others lines of importance of studies.

MBG 06:

Prevalence of *Palb2* Germline Mutations in Early-Onset and Familial Breast/Ovarian Cancer Patients from Pakistan

Noor Muhammad¹, Faiz Ali Khan¹, Humaira Naeemi¹, Asif Loya², Ute Hamann³, Muhammad Usman Rashid^{1,3}

¹Basic Sciences Research, Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH&RC), Lahore, Pakistan; ²Department of Pathology, SKMCH&RC, Lahore, Pakistan;

³Molecular Genetics of Breast Cancer, German Cancer Research Center (DKFZ), Heidelberg, Germany.

bslab@skm.org.pk

ABSTRACT:

In Pakistan, monoallelic germline mutations in the high- and moderate-penetrance breast cancer (BC) susceptibility genes *BRCA1*, *BRCA2*, *TP53*, *CHEK2*, and *RAD51C* account for approximately 25% of early-onset and familial BC, suggesting that other BC susceptibility gene(s) may be involved. Partner and localizer of *BRCA2* (*PALB2*) is a novel BC susceptibility gene. *PALB2* acts as a link between *BRCA2* and *BRCA1* and enables DNA repair. This is the first study aimed to assess the prevalence of *PALB2* mutations in early-onset and familial BC/ovarian cancer (OC) patients from Pakistan. 370 Pakistani early-onset and familial BC/OC patients, previously tested negative for *BRCA1/2*, *TP53*, *CHEK2*, and *RAD51C* mutations, were comprehensively screened for *PALB2* using denaturing high-performance liquid chromatography and DNA sequencing analyses. Novel alterations were analyzed using *in silico* prediction tools. Potentially disease causative mutations were screened in 372 healthy controls. Overall, 31 different heterozygous *PALB2* variants were detected: 13 were novel and 18 have been previously reported in other populations. A novel nonsense mutation, p.Y743*, was identified in one familial BC patient (1/127; 0.8%). Besides, four *in silico*-predicted potentially functional mutations (p.D498Y, novel p.G644R, novel p.E744K and novel c.-134_-133delTCinsGGGT) were identified. The mutations p.Y743* and p.D498Y were identified in two familial patients diagnosed with unilateral or synchronous bilateral BC at the ages of 29 and 39, respectively. The other mutations were identified in an early-onset (≤ 30 years of age) BC patient each. All five mutations were absent in 372 healthy controls suggesting that these are disease causative. *PALB2* mutations were detected with the frequency of 0.8% in patients with familial BC, while no mutations were identified in early-onset BC patients and patients from BC and OC, male BC or OC families. Our findings suggest a marginal contribution of *PALB2* mutations to BC susceptibility in Pakistan.

MBG 07:

Absence of the *TRIP13* C.1060c>T Mutation in Wilms Tumor Patients from Pakistan

Humaira Naeemi¹, Abid Quddus Qazi², Noor Muhammad¹, Mansoor Ahmad³, Noreen Akhtar⁴, Nazneen Rahman⁵ and Muhammad Usman Rashid¹

¹Basic Sciences Research, Shaukat Khanum Memorial Cancer Hospital and Research Centre, Lahore, Pakistan; ²Surgical Oncology, SKMCH&RC, Lahore, Pakistan; ³Department of Pediatrics, Doctors

Hospital Medical Centre Lahore, Pakistan; ⁴Department of Pathology, SKMCH&RC, Lahore, Pakistan; ⁵Division of Genetics and Epidemiology, Institute of Cancer Research, Sutton, Surrey, UK

bslab1@skm.org.pk

ABSTRACT:

Wilms tumor (WT) is the most common childhood malignant renal tumor. Germline mutations in several WT predisposition genes have been identified. However, the fundamental cause of most WT patients remains unexplained. Recently, a founder mutation, c.1060C>T (p. Arg254X) in a mitotic



spindle checkpoint gene, *TRIP13*, was reported in five unrelated children with WT from UK, of Pakistani descent from Azad Kashmir region. This observation suggests other children with WT in Pakistan may also harbor this mutation. We conducted the first study to assess the contribution of *TRIP13* c.1060C>T mutation to WT in Pakistan. Constitutional genomic DNA from 68 Pakistani individuals including unrelated WT cases (n=26) and one (n=10) or both (n=32) of their parent(s) were screened for the *TRIP13* c.1060C>T mutation using DNA sequence analysis. We also included positive controls in the analyses. The median age of WT diagnosis was 3.0 years (range 0.75-10). The *TRIP13* c.1060C>T mutation was not found in any WT patient (n=26) or their parents (n=42). Twenty-four patients (92.4%) presented with unilateral tumor and two patients (7.7%) were diagnosed with synchronous bilateral WT. Thirteen patients (50%) reported parental consanguinity. Thirteen patients (50.0%) belonged to the Punjabi ethnicity and one patient (3.8%) had a Kashmiri background. Four patients (16.7%) reported a family history of WT or other malignancies. The predominant histological subtype was stromal (46.2%). The majority of patients presented with >5 cm of tumor size (81%). None of the patients had a personal or family history of congenital anomalies, or associated genetic syndromes. Our findings suggest that *TRIP13* c.1060C>T mutation may be infrequent in Pakistani WT cases. Further evaluation of this mutation in a large number of WT patients of Kashmiri heritage and various ethnic backgrounds from Pakistan is warranted.

MBG 08:

Association of *IL17F* gene with Arthritis by Family pedigree Analysis

Aisa Parveen, Maryam Mukhtar and Andleeb Batool
Department of Zoology, GC University, Lahore
asia.ch.008@gmail.com

ABSTRACT:

Arthritis is one of the most prevalent, chronic, disabling diseases that may adversely affect the quality of life and growing public economic burden. Previously, it was assessed in the studies that First degree relatives of a family with positive history can be considered at high risk of arthritis. This research was designed to study the inheritance pattern of arthritis among families, by using *IL17F* (rs763780 and rs2397084) as a genetic marker. Total 9 families with doctor-diagnosed arthritis were enrolled for phenotypic analysis and demographic data assessment. Among these, four families were included for genotypic analysis against selected SNPs. PCR-RFLP technique was used to evaluate the genotyping of each individual. Family Pedigrees were drawn to analyze the pattern of disease transfer from parents to the siblings. The results of the current study showed that two SNPs (rs763780 and rs2397084) of *IL17F* were associated with arthritis (OA & RA). It was found that about half of individuals show homozygous mutation for wildtype allele A, less than that shown heterozygous mutation A/G for both SNPs. But homozygous polymorphic allele for allele G was only found for rs2397084. Pedigree analysis of Descriptive data and genotyping evaluated that the relatives of the affected families are more susceptible to carry the disease. Maternal history was found stronger to transfer arthritis. It has revealed that among Pakistani population, an association of arthritis with candidate alleles encoding a shared epitope. Hence, Family pedigree analysis can be used for personal and pre-diagnosis prior to onset of disease.

**MBG 09:****Association of *PTPN22* gene with Type 2 Diabetes**

Muhammad Shehzad, Riffat Iqbal, Aneeqa Zafar, Andleeb Batool
Department of Zoology, Government College University Lahore, Pakistan
riffatiqbal@gcu.edu.pk

ABSTRACT:

Type 2 diabetes Mellitus (T2DM) is a complex metabolic disorder characterized by hyperglycemia and associated with a relative deficiency of insulin secretion, along with a reduced response of target tissues to insulin (insulin resistance). Genetics play a crucial role in its pathogenesis. The current research was aimed to report the association of *PTPN22* gene with T2DM in Pakistani population. For this purpose, four families with positive family history of diabetes were selected and blood samples were collected from the Khanewal and Punjab, Pakistan. According to WHO criteria, all the families were clinically diagnosed with diabetes and assessed for clinical parameters. DNA was isolated and targeted sequence was amplified by primer specific PCR reaction. Genotyping was performed by PCR RFLP and direct sequencing. It was found that Increased BMI, age and positive family history of diabetes were strong predictors of disease onset at early age respectively. Polymorphic site (rs2476601) on *PTPN22* was a significant predictor of T2DM development and was inherited as an autosomal recessive manner among families. Furthermore, large scale study should be conducted to establish the association of *PTPN22* with T2DM.

MBG 10:**Susceptibility of *CTLA-4* with development of Rheumatoid Arthritis**

Aneeqa Zafar, Andleeb Batool, Riffat Iqbal, Muhammad Shehzad, Samia Azad
Department of Zoology Government Collage University Lahore.
riffatiqbal@gcu.edu.pk

ABSTRACT:

Rheumatoid Arthritis (RA) is an autoimmune disease which is characterized by the pain, inflammation, joint stiffness, destruction of synovial joints, cartilage and bones. Therefore, the study was conducted to identify the susceptibility of *CTLA-4* gene in RA patients of Pakistan population. For this, a case control study was conducted based on 30 patients (7 males, 23 females) and 30 control (7males, 23 females). Blood samples from patients with RA were taken from the Mayo Hospital Lahore Punjab, Pakistan. According to the WHO criteria all the patients were clinically diagnosed with RA and assessed for clinical parameters. Patients were with mean age of 52.4 and 51 years for males and females respectively. Male patients were overweight having 29.86 BMI value and female patients were obese having 30.1 BMI value which indicate that they were at high risk of disease development. Age of diagnosis of patients for males and females were 50.57 years, 45.69 years, in which 9 patients have positive family history 6 were males and 3 were females. Genomic DNA was isolated from blood through manual extraction. Primers were optimized and genotyping was done by PCR which was followed by DNA sequencing and RFLP. As a result of polymorphism of G into A was identified on rs4553808 polymorphic site on *CTLA-4* gene. A significant association was detected between allelic and genotypic frequencies of rs4553808 and onset of RA (p=0.001). In conclusion rs4553808 was significantly associated with onset of RA in Pakistan population and females are at higher risk. Further studies should be conducted on large scale to evaluate the association of *CTLA-4* polymorphism with RA.

**MBG 11:****A Homozygous Missense Mutation in BBS9 Gene Manifesting Autosomal Recessive Bardet-Biedl Syndrome in Consanguineous Kashmiri Family**

Ghazanfar Ali and Syeda Ain-ul-Batool

Department of Biotechnology, University of Azad Jammu and Kashmir, P.O. Box 13100,
Muzaffarabad, Pakistan
ali.phd.qau@gmail.com**ABSTRACT:**

Bardet-Biedl syndrome (BBS) is a rare autosomal recessive ciliopathic genetic disorder in humans. It is a multisystem disorder and is principally described by visual abnormalities, con-rod dystrophy, eyes exotropia, obesity, polydactyly, hypogonadism, and renal abnormalities. Few additional features of BBS also include delayed motor development, clumsiness, anosmia, ataxia, hypodontia, hearing impairment, and hirschsprung disease, cardiovascular and liver disorders. So far 21 genes are reported that cause BBS (BBS1-BBS21). Permission to conduct the present research was obtained from the Director Advance Studies and Research (DASR) of University of Azad Jammu and Kashmir, Muzaffarabad. In the present study, a consanguineous family was investigated, from district Bagh, Azad Kashmir. Pedigree was constructed as per information provided by the family's elders. A consanguineous Kashmiri family having clinical symptoms of BBS9 is described in current study. Mutation was detected in BBS9 on chromosome 7p14.3 using whole exome sequencing (WES). A splice acceptor site mutation (c.1131G>A) in exon 3 in all affected individuals of this family was revealed by Sanger sequencing

MBG 12:**Genetic Variants Associated with Obesity and Insulin Resistance in Lahore Population**

Ayesha Masood, Irfana Liaqat, Rahila Islam, Tehreem Zia

Department of Zoology, GC University, Lahore Pakistan
ayeshamasood889@gmail.com**ABSTRACT:**

Obesity is a disorder in which excess body fat is accumulated and results in different metabolic disorders. The changes in the genetic sequence of insulin receptor gene (*INSR*) at exon 17 can lead to insulin resistance. The aim of current study is to investigate the genetic variants associated with obesity and insulin resistance in Lahore population. This was a case control study comprising 210 people. This includes 48 obese and 48 non-obese subjects selected for genetic analysis. DNA of all the subjects was isolated to find out the single nucleotide polymorphism of *INSR* gene (rs1799817 and rs1799815). The optimization of primers and copies of DNA fragments was done by Polymerase Chain Reaction (PCR) analysis. The products were then subjected to direct sequencing. The frequency of rs1799817 in obese females and non-obese females for homozygous (CC) were 47.37% and 23.68% respectively, heterozygous (TC) were 47.37% and for homozygous (TT) 5.26% and 28.94% respectively ($p < 0.01$). The frequency in obese males and non-obese males for homozygous (CC) were 60% and 20% respectively, for heterozygous (TC) were 30% and 50% respectively and for homozygous (TT) were 75% and 45% respectively ($p < 0.01$, OR=2.3, 95% CI= (0.13-0.92), $\chi^2=3.76$). The allelic frequency for C allele in obese females and non-obese females were 71.05% and 47.36% respectively and for T allele were 28.94% and 60.52% respectively ($p < 0.005$). The differences in genetic variation between obese and non-obese made it evident that *INSR* plays an important role in obesity in Lahore population.



EPIDEMIOLOGY AND PUBLIC HEALTH (EPH)

**EPH01:****Control of Zoonotic Diseases at One Health and Public Health Nexus**

Dr. Imran Arshad, DVM, PhD, US-NAS One Health Fellow, Member Pakistan Academy of Sciences (PAS), Assistant Professor, Institute of Microbiology, University of Agriculture, Faisalabad, Pakistan.

drimranarshad@yahoo.com

ABSTRACT:

An estimated 70% of emerging infectious diseases (EIDs) of public health importance are linked to animals and such transmission is controlled by host, agent and environmental factors. The “ONE HEALTH” is a global initiative and a multi-disciplinary approach to address and solve the inter-connected health of humans, animals, and the environment. Potentially infectious diseases such as highly pathogenic influenza (HPAI) viruses, MERS-CoV, Ebola and Zika viruses have pandemic distribution crossing the borders. The animals serve as sentinel as well as early warning signals for most of epidemics and pandemics such as avian influenza, MERS-CoV, Ebola, Dengue and Zika viruses. The ONE HEALTH approach is an integrated strategic framework for reducing the risks of emerging and re-emerging infectious diseases and transboundary zoonotic diseases at the Animal-Human-Ecosystem interface. The One Health approach is plausibly needed to circumvent the alarming infectious, zoonotic (MERS-cov, Brucellosis, Q-Fever, Rabies, wildlife diseases), vector-borne (Dengue, CCHF, Encephalitis arboviruses), multi-drug resistant pathogens (food animals and companion animals), non-communicable, nutritional and adulterated-food diseases (e.g. pesticides toxicity in agriculture, fungal toxins, water contamination, drug residues). The One Health approach is applicable in health related issues of food safety, security, foods of animal origin, food inspection and bio-surveillance of diseases at the animal-human-environment triad. Hence, the sensitization, training and recognition of One Health approach for veterinary professionals are required to combat the emerging and re-emerging animal or animal-human health issues. Here, the data of One Health case studies is collated for appraisal of One Health and Public Health nexus in prevention and control of trans-boundary zoonotic diseases as per tripartite model of FAO-WHO-OIE.

EPH02:**Development and use of Molecular Markers in Healthcar**

Muhammad Naeem*, Ahmad Munir, Sadam Hussain Siddiqi
Department of Biochemistry, University of Agriculture, Faisalabad, Pakistan
naeemsaleem413@gmail.com

ABSTRACT:

Molecular markers are the most important and popular tools with many biomedical applications in gene mapping, gene labelling phylogenetic analysis and forensic science because of their stability and effectiveness. In the last years, many molecular marker techniques have been developed and frequently used worldwide in various systems but only some techniques have been accepted globally including Single nucleotide polymorphism (SNPs), Restriction fragment length polymorphism(RFLPs), Random amplification of polymorphicDNA(RAPDs) and Amplified fragment length polymorphism(AFLPs), Variable number tandem repeats(VNTRs) and Single sequence nucleotide polymorphism(SSNPs). Recent advances in DNA sequencing techniques use the applications of molecular markers which are also known as genetic markers to a great extent. However, the choice of marker depends on the user requirements. Moreover, advanced functional and handy markers will lead the development of high throughput genetic map construction, breeding and identification of quantitative trait locus (QTL). The main purpose of using different molecular markers techniques because of their applications in molecular biology in health aspects of view and their characteristic features.

**EPH03:****Application of Modern Trends of Systematics in Authentication of Traded Medicinal Plants for Public Health Safety**

Sidra Nisar Ahmed^{1,2}, Mushtaq Ahmad², Muhammad Zafar², Sofia Rashid^{2,3}, Shomaila Ashfaq² and Shazia sultana²

Department of Botany, The Women University Multan, Pakistan

Department of Plant Sciences, Quaid-i-Azam University, Islamabad 45320, Pakistan

Department of Biosciences, COMSATS University, Islamabad, Pakistan

nisar.sidra3@gmail.com

ABSTRACT:

High global consumption of medicinal plants coupled with their demand in markets and lack of resources lead to the threatening issue of adulteration. Correct identification of pure and genuine medicinal material is prerequisite for safety and efficacy of plant based medicines. The present research project is based on taxonomic, pharmacognostic, physicochemical and chemical analysis of eight cases of traded medicinal plants presented in tables, figures, chemical profile and pictorial guide of original source like *Berberis aristata*, *Colchicum luteum*, *Alcea rosea*, *Sisymbrium irio*, *Argyrolobium roseum*, *Centipeda minima*, *Eruca sativa* and *Eucalyptus camaldulensis* with their adulterants. These taxonomic problematic medicinal plants are authenticated by detailed study of characters like morphology and organolepty, shape of epidermal cells and their margins, stomatal type, trichome type, pollen shape and exine sculpture pattern, solubility, fluorescence behavior under visible and ultra violet (UV) light, differentiation. In physicochemical analysis, total phenol and total flavonoid content (TPC and TFC), quercetin level under High Performance Liquid Chromatography (HPLC), percentage scavenging activity and antioxidant potential. The findings of the present research project authenticate genuine source of medicinal importance like Zereshk (*Berberis aristata* from its adulterants *Berberis lyceum* and *Vitis Jacquemontii*); Surunjaan talkh (*Colchicum luteum* from its adulterant *Narcissus tazetta*); Gul-e-kheira (*Alcea rosea* from its adulterant *Hibiscus syriacus*); Khoob kalan (*Sisymbrium irio* from its adulterant *Coronopus didymus*); Makhni booti (*Argyrolobium roseum* from its adulterant *Viola stocksii*); Nakchikni (*Centipeda minima* from its adulterant *Wattakaka volubilis*); Tara Mira (*Eruca sativa* from its adulterant *Naturtium officinale*) and *Eucalyptus* (*Eucalyptus camaldulensis* from its adulterant *Populus ciliata* and *Salix alba*). Outcomes of this research are helpful in maintaining quality, safety and efficacy of traded medicinal plants. In addition, authentication of genuine medicinal source may lead to extraction of required chemical constituents that may assist in future studies to develop natural herbal drugs at global perspectives.

EPH04:**Global Environmental Risk Factors and Noncommunicable Diseases**

Syed Naeem Sajid¹, Arzoo Rubab¹, Nadia Azhar², Muhammad Naeem³ ¹Centre of Agricultural Biochemistry & Biotechnology, University of Agriculture, Faisalabad, Pakistan

²Department of Botany, University of Agriculture, Faisalabad, Pakistan

³Department of Biochemistry, University of Agriculture, Faisalabad, Pakistan

syednaeemsajid2969@gmail.com

ABSTRACT:

Climate change results in global environmental changes and disturbance of natural environment which ultimately lead to destruction of habitat of living organisms, depletion of freshwater, cutting of forests, death of fishes due to toxic metals in drinking water, ecological destruction of living



organisms and soil degradation have negative impact on human health. Noncommunicable diseases such as cardiovascular, diabetes, cancer and chronic respiratory diseases make a major contribution to the global burden of diseases. A lot of factors responsible for changes in environment globally also increases the risks of noncommunicable diseases through human activities such as use of chlorofluorocarbons (CFCs) as coolants and aerosols with a range of mechanisms that affected overall biogeochemical cycle. The pathways that linking global environmental changes and noncommunicable diseases categorized as one is balanced between energy, air pollution, and climate change, second is the process of making an area more urban. third is to maintain cycle between food, nutrition, and agriculture fourth is the deposition of persistent chemicals found in the environment and last one prevention of biodiversity.

EPH05:

Computational Screening of Phytochemicals against Munc13-1, a Promising Target to Treat Alcoholism

Muhammad Hamza Tariq and Shanza Imran
Institute of Biochemistry and Biotechnology, University of the Punjab, Lahore, Pakistan.
hamza382@gmail.com

ABSTRACT:

Alcohol abuse is a big threat to society, economy and wellbeing of people. It has globally increased the overall disease and injury burden. Munc13-1 is a brain protein, whose C1 domain plays a significant role in the development of alcohol tolerance, by binding to alcohol molecules, eventually leading to Alcohol use disorder. The aim of this study was to ascertain a phytochemical that would attach to our target protein, Munc13-1 C1 domain so that it cannot bind with the alcohol molecules. The 3D structure of 'Munc13-1 C1 domain' was acquired from PDB database with PDB ID '1Y8F'. Molecular docking and ADMET analysis were done to feature potential inhibitory activities of different bioactive phytochemicals used in this study. Results of Molecular docking revealed that; 8-Hydroxyhesperetin, Eupatorin and Monotesone A are the three phytochemicals that shows good inhibitory properties against C1 domain of Munc13-1. ADMET analysis illustrated that all these compounds were non-toxic and non-carcinogenic. Furthermore Molsoft and molinspiration software confirmed that all of these compounds have very good pharmacological properties. Further in-vivo and in-vitro examinations are required to inspect the role of these phytochemicals in reducing the alcohol tolerance.

EPH06:

Primilinary Study of Affinity of Estrogen on Mood Swings Among Females of Hyderabad, Sindh Pakistan

Muhammad Junaid Khilji¹, T. J. Ursani¹, J. A. Khokhar¹, Samina Malik¹ and Nasir Uddin Shaikh²

¹Department of Zoology, University of Sindh, Jamshoro- 76080 Pakistan

²Department of Education, Hyderabad.

jawaid.khokhar@usindh.edu.pk

ABSTRACT:

The main aim of the present study was to find out estrogen level with respect to menstrual cycle and effects on mood swing among girls. The proposed study was descriptive in nature. The target population of the study was comprised on 100 girls with range of age in between 13-22 years. During present study mood swing were observed through questionnaire and blood investigation of estrogen



level in three phases. Data was collected during January 2016 to December 2016 from schools and colleges of Hyderabad region. This study is based upon three phases these were as Phase I showed observation before menstruation. Phase II showed observation during menstruation and Phase III showed observation after menstruation. In findings headache, depressive mood, mood change, sleep problem, mental confusion, irrational anger, tension, showed lack of motivation were observed. The obtained consequence of laboratory and questionnaires clearly indicate the ESTROGEN levels have strong impact on mood swings in girls. This study is carried out first time from Hyderabad and has excellent impact on school and college girls. Majority of the girls goes to stress due to unawareness about the facts of menstrual cycle, which is a biological phenomena. The girls take it serious and go to stress and create other conceptions in their mind. This study will help them during menstrual cycle and will aware them about this biological process.

EPH07:

High Prevalence of HBV & HCV in Pregnant Women of District Bannu Khyber Pakhtunkhwa Pakistan

Noor Zada Khan¹ Rabia Nousheen², Amir Khan¹ Kenza Javed¹, Farman Ullah Dawar¹, Syed Ishtiaq Anjum¹, Irum Gul¹, Sunmbal Haleem¹, Naila Gul¹ Muhammad Rauf¹, Rafiq Hussain¹ and Kalim Ullah¹

¹Department of Zoology, KUST, Kohat, KP

²Department of Botany, KUST, Kohat, KP

ABSTRACT:

Hepatitis B and Hepatitis C virus infections are major health problems all over the world. The objective of this study was to determine the prevalence and associated risk factors of HBV and HCV in pregnant women of district Bannu, Khyber Pakhtunkhwa, Pakistan. A total of 120 blood samples were collected from pregnant women attending different healthcare centers and hospitals of district Bannu. Samples were analyzed through ICT tests for anti-HBV and anti-HCV-specific IgG antibodies. Total of 120 samples were collected out of which 12 were HBV positive (10.00%) and 20 were HCV positive (16.66%). HBV and HCV seroprevalence increased gradually with age group, and high prevalence was reported in age group 34 - 40 year (31.70%). In addition illiterate women were more positive for HBV and HCV (30.98%) compared to illiterate. Similarly house hold wives and women living in rural areas were more infected with HBV and HCV. HBV and HCV infection was very high in the study population, therefore routine screening of HBV and HCV among pregnant women is highly recommended.

EPH08:

Estimation of frequency of Giardia among children suffering from diarrhea

Madiha Sana¹, Farkhanda Manzoor¹, Mateen Arshad¹, Abdullah Saghir Ahmad², Sidra Arshad¹ and Hafsa Hameed¹.

Department of Zoology, Lahore College for Women University, Lahore¹

Department of Parasitology, University of Veterinary and Animal Sciences, Lahore²

ABSTRACT:

Giardiasis is mostly referred as water borne disease that is directly linked with the quality of life. The disease spreads among people due to poor hygiene and it may result as asymptomatic infection. *Giardia* is reported to be the main cause of diarrhea that causes abdominal discomfort along with weight loss and malabsorption. The present study was conducted to estimate the frequency of *Giardia* among children in Lahore from February to May 2018. We collected around 206 samples of different



diarrhea patients from General and Services Hospital Lahore. There were 172 samples collected from children till the age of fourteen. Other relevant details including risk factors were also collected with the consent of patients' guardian. The collected samples were then stained with methylene blue to detect the presence of trophozoites of *Giardia* in the samples collected. The results showed that 48% of collected samples from children were stained positive for *Giardia*. Moreover, the highest incidence of infection was reported in the month of March. Among school going children suffering from diarrhea, 49% were reported to be positive for Giardiasis. It is concluded that Giardiasis is more abundant in children below than four years.

EPH09:

Prevalence of Hypothyroidism in Patients with Thyroid Goitre at NIMRA Jamshoro, Sindh

Iqra Qureshi¹, T.J Ursani¹, Dr. Sadique Hussain² and Jawaid Khokhar¹

¹Department of Zoology, University of Sindh, Jamshoro- 76080 Pakistan

²NIMRA, Jamshoro

iqramoinuddin@gmail.com

ABSTRACT:

Jamshoro is Health and Education center of Sindh, along with densely populated area. Hypothyroidism is circumstance in which thyroid gland doesn't produce enough of certain crucial hormones. Thyroid disorder affects all ages and either gender. South Asian population has a particularly high prevalence of thyroid disorders mainly due to iodine deficiency. Its sole symptom is a visible goitre (enlargement of thyroid gland). Its true incidence is unknown though it is endemic in the northern areas of Pakistan especially in Swat, Dir and Chitral districts of Khyber Pakhtunkhwa and certain areas of Sindh province especially Jamshoro. In this context an attempt was made to study the Prevalence of Hypothyroidism in patients with thyroid goitre. The data was collected from 60 patients by questionnaire and bio chemical markers. It was noticed that the most common cause of goiter is iodine deficiency, malnutrition and poor living standard. Hypothyroidism is produces other several conditions, like 1 to 2% of the population has spontaneous hypothyroidism with 1.9% females and 0.1% males. It is more common with advancing age, affecting patients with age 40 or over. Women are affected 10 times more frequently than men. Severe hypothyroidism may lead to coma and death if untreated.

**EPH10:****Prevalence of Cardiovascular Diseases in Diabetic Patients Visiting Diabetic Centers of Lahore**

Saima Sharif, Shabina Waris, Shagufta Naz, Tasnim Farasat
Department of Zoology, Lahore College for Women University, Lahore
saimasharif04@gmail.com

ABSTRACT:

People suffering from diabetes are at high risk of developing cardiovascular diseases. The present cross sectional study was a hospital based prospective study. It was designed to investigate the prevalence of cardiovascular diseases in diabetic patients. A total of 1000 patients were enrolled. A questionnaire was designed to get all necessary information from subjects under study. Personal information e.g type of diabetes, family history of diabetes, duration of diabetes, smoking habits, socio economic status, diet, duration of CVD, family history CVD, life style and physical activity were asked from diabetic patients. Blood pressure, height, weight, BMI and glycemic level were measured. Cholesterol was measured on chemistry analyzer by using commercially available kit. ECG was performed to diagnose cardiovascular diseases and cardiac enzymes i.e serum Troponin-T and Troponin-I were also measured for. In present study 380 (38%) females and 620 (62%) males were enrolled. The age group of diabetic patients was 30-95 years. 81% subjects were suffering from type 2 diabetes and 19 % were suffering from type-1 diabetes. Among the studied subjects 38% (n= 380) were suffering from cardiovascular diseases including 41.9% (n= 260) males and 33.7 % (n=129) females. 22% (n= 220) of the subjects had family history of cardiovascular diseases. The study concludes that prevalence of cardiovascular diseases in diabetic patients was 38%.



ENVIRONMENT AND TOXICOLOGY

**ET01:****Kinetic studies and adsorption isotherms for the removal of heavy metals Nickel (II) by eco-friendly biosorbent green algae *Spirogyra quadrata***

Suleman Shahzad, Atif Yaqub and Faizan Naeem
Department of Zoology, GC University, Lahore, Pakistan.
atif@gcu.edu.pk

ABSTRACT:

Contamination of the water bodies with heavy metals ions being added from industrial activities has posed a serious threat to inhabiting life forms, both in aquatic as well as terrestrial environments which create an acute need to develop effective technology for the removal of such pollutants. In the present study, green filamentous algae, *Spirogyra quadrata*, was employed for biosorption of Nickel [Ni (II)] to remove these pollutants from aqueous medium. Various physico-chemical parameters were optimized; optimum pH for the biosorption of Ni (II) was found to be 4 ($q_{\max} = 27.34$ mg/L); optimum biomass concentration was found to be 10 mg/L for Nickel [Ni (II)] metal ions; optimum time required for the biosorption of Ni (II) was 90. Different isotherm models for adsorption were used, e.g. Freundlich, Temkin and Langmuir; Langmuir model was found to be most suitable which shows monolayer sorption. Kinetic model for Pseudo-second order was applied for elucidating the kinetics process. FTIR (Fourier Transform Infra-red Spectroscopy) was also performed which revealed the existence of possible functional electronegative groups on the surface of algal wall responsible for cation binding, such as Ni (II).

ET02:**Bisphenol A Delays the Sensory Functional Recovery Following Peripheral Nerve Injury in Mice.**

Rida, Sidra Afzal, Mehwish Faheem and Chand Raza
Department of Zoology, GC University Lahore, 54000, Pakistan.
chandraza@gcu.edu.pk

ABSTRACT:

Bisphenol A (BPA) is a synthetic compound having immense importance at a commercial level. It is used in the production of various items like polycarbonate plastic, toys and the lining of the canned food. In 2013, 15 billion pounds BPA production was reported. Due to its extensive use in the present world, it has become a ubiquitous pollutant. Mounting evidence suggests that BPA has detrimental effects on different biological systems such as digestive, endocrine and immune systems. BPA is especially notorious for its effects on the nervous system, having neurodegenerative properties. It reduces the size and number of cells of the cerebrum and the cerebellum. However, its effect on peripheral nerve regeneration is still unknown. Peripheral nervous system (PNS) neurons have the capacity to survive and have a remarkable ability of regeneration after the nerve injury. Peripheral nerve injuries (PNI) are common nowadays and impose significant problems to health with incomplete functional recovery. The current study presents the effects of BPA on the regeneration of injured peripheral nerve using sciatic nerve crush injury on a mouse model. Two groups of adult male mice were administered with BPA (5mg/kg/day and 25mg/kg/day), along with a vehicle control (2.5% DMSO). Three behavioral tests were used to unveil the sensory and motor functional recovery of the crushed nerve. Our data provide experimental proof of BPA induced delayed peripheral nerve regeneration in adult mice. However, further studies are warranted to investigate the underlying mechanism of delayed functional recovery in BPA treated mice.

**ET03:*****Zingiber officinale* and *Allium sativum*-mediated copper nano-particles with synergic effect of doxycycline for selected bactericidal and anti-cancer activity**

Arifa Shabbir¹, Sarwar Allah Ditta¹, Fouzia Tanvir¹, Shaista Ali², Misbah Naz², Syed Akif Raza Qazmi², Naila Malkani¹, Atif Yaqub¹

¹Department of Zoology, GC University, Lahore, Pakistan

²Department of Chemistry, GC University, Lahore, Pakistan

atif@gcu.edu.pk

ABSTRACT:

Copper nano-particles (CuNPs), due to their cost-effective synthesis, interesting properties and a wide range of applications in conductive inks, cooling fluids, bio-medical field, and catalysis, have attracted the attention of scientific community in recent years. Reported herein is the development of anti-bacterial and anti-cancer copper nano-particles (CuNPs) synthesized via chemical and biological methods. Ascorbic acid was used as a protective and stabilizing agent. Doxycycline was conjugated to enhance the synergic effects as a bactericidal agent. Transmission electron microscopy (TEM) revealed spherical shapes of the nanoparticles and nanoconjugates with size range 20-40nm (CuNPs), 30-50nm (Garlic-mediated CuNPs), 30-60nm (Ginger-mediated CuNPs), and Surface Plasmon Resonance peaks were obtained at 570nm, 575nm and 610nm for CuNPs, Gar-CuNPs, and Gin-CuNPs, respectively. Fourier Transform Infra-red spectroscopy was performed to evaluate the consumption of specific bio-molecules from the plant extracts. Anti-bacterial activity against *Pseudomonas aeruginosa* and *Escherichia coli* and anti-cancer activity against HeLa and HepG2 cell lines was evaluated. Doxycycline conjugated NPs exhibited more anti-bacterial effects than doxycycline or CuNPs alone. The chemically synthesized nano-particles displayed more significant anti-microbial activity when capped with doxycycline than *Zingiber officinale* and *Allium sativum*-mediated CuNPs; however, green synthesized nano-particles showed greater anti-cancer activity when compared to their chemical counterparts.

ET04:**Fecal Matter as Bioindicator of heavy metal toxification in blackbuck (*Antelope cervicapra*) from different Zoological gardens of the Punjab**

Roheela Yasmeen^{1*}, Humma Azmat¹, Uzma Rafi¹, Syeda Shazia Bokhari¹, Aisha Waheed Qurashi¹, Bushra Nisar Khan²

¹Department of Biology, Lahore Garrison University, Lahore, Pakistan

²Center for the Undergraduate Studies, University of the Punjab, Lahore

roheelayasmeen@lgu.edu.pk

ABSTRACT:

Metals have a tendency to bio-accumulate in the living tissues and considered as a major class of pollutants that can be responsible for a high level of toxicity in living beings. Study of environmental contamination by heavy metals in the wildlife or those caged in the zoos is a difficult and challenging task. In the present study non-invasive technique (faeces) was used to investigate the heavy metal exposure in Blackbuck from different environmental media (water, soil). Levels of different heavy metals such as zinc, lead, cadmium, and copper were determined by using Atomic absorption spectrometry. The levels of heavy metals were recorded in faecal, water and soil samples of *Antelope cervicapra* at Lahore Zoo, Lahore Safari Zoo, Bahawalpur zoo and, Lal Sohanra National Park. It was observed that levels of metals were higher in Lahore Zoo and negligible in RD 65. However, on all other sites moderate level of metals were recorded. It was concluded that non-invasive method is a reliable and an appropriate technique that can be used to get an estimation of heavy metal contamination of the environment.

**ET05:****Potential of crab shell-based biomaterial (chitin) as sorbent for removal of toxic metals (Cd and Pb) in an aqueous solution**

Asmat Saleem Siddiqui and Noor Us Saher
Centre of Excellence in Marine Biology, University of Karachi
asmatsiddiqui@gmail.com

ABSTRACT:

The influence of water pollution on human health is one of the most important and adamant global issue as water meagerness. Water cleanliness and hygiene are tremendous challenges for the promising future of human beings, therefore, water remediation faces many obstacles in effectively struggle with marine pollution, especially under developing countries, alike Pakistan. During the last few years, researchers focused on low-cost biomaterial to remediate water at a lower cost with the higher efficiency as commercial availability. Crustacean shells (chitin) are magnificent biomaterial that is usually treated as a bio-waste in the seafood industry. Conversely, it has great tendency to remediate the heavy metal ions, organic matter, and anionic species in an eco-friendly manner. The aim of this study is to provide insight on the effectiveness of crab shell as low cost biosorbent for the removal of highly toxic metals e.g. cadmium (Cd) and lead (Pb) ions from the water. The batch experiment was conducted and effects of contact time, ionic strength and pH were investigated on metal ion removal efficiency of chitin. The data for adsorption process for both metals adequately fitted to the Langmuir model than Freundlich model. The interactions between crab chitin and metal ions were examined by qualitative analysis methods (FTIR and SEM-EDS), which revealed the successful adsorption of metals onto crab chitin.

ET06:**Evaluation of biochemical changes induced by pyriproxyfen in adult albino mice**

Sania Saeed and Amna Shahid
Department of Zoology, GC University, Katchery Road, Lahore, Pakistan
a_shahid13@yahoo.com

ABSTRACT:

In the present study, the toxicological effects of pyriproxyfen on biochemical parameters in albino mice were determined. During the experimental period, the mice were divided into 8 groups, one control and seven treated groups. The treated groups were given dosage of 1200, 600, 320, 200, 100, 40 and 20 mg/kg body weight orally for 28 consecutive days. The body weights were recorded daily in each experimental and control group of mice. After 28 days, the results showed a significant ($P < 0.05$) decrease in body weight of mice in all treated groups as compared to controls. The levels of enzymes biomarkers Aspartate Amino Transferase (AST), Alanine Transaminase (ALT), Alkaline Phosphatase (ALP), Gamma Glutamyl Transferase (GGT), urea and creatinine were determined by using human chemistry kit (Germany and microlab 300 analyzer). The levels of serum biomarkers (ALT, AST, and ALP) increased significantly ($P < 0.05$) but was low in the highest dose (1200 mg/kg) as compared to the other doses given to the mice. The level of urea was high in the highest dose and decreases in the lower doses (600, 320, 200, 40 and 20 mg/kg). The activity of GGT decreases in a dose dependent manner i.e. lowest value in the highest dose. As for the creatinine levels, there were no significant ($P > 0.05$) change in the treated groups as compared to control group. These changes in serum biomarker enzymes showed that pyriproxyfen disturbs and damages the liver function. As a result of present study, it is concluded that this IGR not only effects the environmental factors but also influences the health of living organisms.

**ET07:****Occurrence and toxicity of Cd in Seafood associated with human health**

Nayab Kanwal & Noor Us Saheer

Centre of Excellence in Marine Biology, University of Karachi

nayabkanwal01@gmail.com**ABSTRACT:**

Shellfish are an important source of toxic metals, but also of essential elements in the diet. Seafood provides long-chain omega-3 fatty acids vitamins and minerals, which are essential to maintain good health. Moreover, seafood is a source of contaminants such as heavy metals and persistent organic pollutants that may affect health. Despite the existence of a legislation regarding seafood contaminants, food safety control in Pakistan is a matter of great concern. The aim of the present study was to determine in what quantities seafood consumption would provide nutritional benefits, while minimizing the risks linked to food contaminants. This study investigates the Cd level in commercially important seafood available in Karachi harbor and market. The aim of this study is to present the impact of Cd contamination and accumulation in seafood and human health from field and through Bioassay. The health risk associated with Cd intake through seafood ingestion was evaluated. The results indicated that seafood consumption does not pose a significant health concern in the case of the usual consumption rate which is emblematic for the human. However, a highly frequent consumption of seafood can have adverse health effects.

ET08:**Estimation and Detoxification of Aflatoxins in the Ostrich Feed Samples Collected from Selected Areas in Lahore**Sonal Chaudhry¹, Bushra Nisar Khan², Sajila Hina³, Nighat Sana¹, Alim-Un-Nisa³, Ijaz Ahmad³ and Maryam Ilyas⁴¹Postgraduate College for woman, Samanabad, Lahore²Department of Zoology, University of the Punjab, Lahore Govt.³Pakistan Council for Scientific and Industrial Research, Lahore⁴Lahore College for Women University, Lahorebushra.hons@pu.edu.pk**ABSTRACT:**

Ostrich farming is a revolutionary development in the poultry sector of Pakistan that is contributing about 2% in GDP with high demands of its delicious low fat meat. However the presence of Aflatoxins in feed products can lead to health hazards in both the poultry and the humans consuming them. Hence a baseline survey for aflatoxin contamination was conducted on 10 Ostrich post-feed and pre-feed samples collected randomly from different areas in Lahore including recreational sites, farm, mill, breeding site and markets during November 2018 to January 2019 and then again in March to May 2019. These samples were tested by Thin Liquid Chromatography according to the AOAC official methods of aflatoxin analysis in PCSIR Laboratory complex. Results concluded 60% contamination during summers when the average temperature was 27.06 °C than 20% in winters at an average temperature of 15.41 °C. Also the management facilities were observed to be poor in most of these selected areas. The positive detected 50 g feed samples were then detoxified using the 0.5, 1 and 1.5 g bud powder of *Moringa oleifera* incubated for 7, 14, 21 and 28 days and checked by TLC again. The results were statistically analyzed by Paired T – Test to conclude that the ratio of 1.5 g was more effective for degradation of toxin. Therefore addition of *Moringa oleifera* may be an efficient biological control method for aflatoxins in feed materials.

**ET09:****Removal of Toxic Chromate by Cr(VI) Resistant Bacteria from Tannery Waste**

Asma Kalsoom and Rida Batool

Department of Microbiology and Molecular Genetics, University of the Punjab, Quaid-e-Azam Campus, Lahore-54590, Pakistan.

asma.phd.mmg@pu.edu.pk

ABSTRACT:

Chromium (Cr) is a heavy metal, naturally found in biosphere. The two oxidation states i.e. Cr⁺³ and Cr⁺⁶ are of biological concern. Cr⁺³ occurs in environment in less toxic and insoluble form whereas Cr⁺⁶ is soluble and more toxic to living cells. This study aims to isolate chromate resistant bacterial strains from tannery polluted site of Lahore, Pakistan. Sixteen different chromate resistant bacteria were isolated at an initial concentration of 1500 mg/L K₂CrO₄. Morphological and biochemical analysis showed that most of the strains were Gram positive cocci except R2 and were oxidase positive except A2, A10, A12. For catalase test, all Cr(VI) resistant strains were catalase positive except strain A6. Most of the strains exhibited multiple heavy metals (NiCl₂, CuCl₂, ZnCl₂, PbCl₂, CoCl₂, HgCl₂) and antibiotics resistances (chloramphenicol, tetracycline, ampicillin). These strains could tolerate 50 mg/ml of K₂CrO₄ on LB agar. Strain A8 and A20 exhibited highest Cr(VI) reduction potential of 77% and 74%, respectively at an initial concentration of 1500 mg/L K₂CrO₄. Strain A18 revealed maximum exopolysaccharide (EPS) production i.e. 11.6 g/L under Cr(VI) stress condition (1500 mg/L). These strains can be suitable candidates for the remediation of chromate contaminated sites.

ET10:**Association of high fat diet and circulatory insulin level in mice.**

Dilara Abbas Bukhari, Muniba Ahmed

Department of Zoology, GC University, Katchery Road, Lahore, Pakistan

ABSTRACT:

The present studies conducted to check the effect of high fat diet (Banaspatti ghee) on the circulating insulin level. Dietary fat rich in high fat diet causes obesity in humans as well as in animals. Obesity results in a number of diseases for example coronary artery diseases, increased risk of diabetes, hypertension and results in shorter life span. The metabolic syndrome is closely related to metabolic disruption which is called insulin resistance. Insulin resistance can precede the development of type 2 diabetes for many years even decades. Slight increase in resistance to insulin encourage glucose uptake and it results in increase in insulin production from cell of pancreas. For this purpose mice were divided into 3 groups, one control and two experimental. Control group was given normal diet and experimental groups with 2 different types of commercial ghee for 45 days. Due to this dietary fat their weight increased. After dissection their blood was collected and applied ELISA to check insulin resistance level. Results showed that there was remarkable increase in females for both ghee samples as compared to males which means that females are more susceptible to diseases and obesity.



POSTER PRESENTATIONS

**PO 01:****Effect of pyriproxyfen on the reproductive dysfunction in albino mice.**

Syeda Durr E Shahwar Zaidi and Amna Shahid

Department of Zoology, Government College University, Katchery Road, Lahore, Pakistan
a_shahid13@yahoo.com**ABSTRACT:**

Pyriproxyfen is a pyridine insecticide, and insect growth regulator, extensively used in agriculture against various insect pest and public health control program lead to the environmental pollution, penetration in food chain and detrimental effect on human and other species of animals. In the present study, the effects of pyriproxyfen on reproductive dysfunction in male albino mice (including the body and organ weights) were evaluated. In this study, 48 albino mice, average weight of 19-32 g were divided into eight groups, control (untreated) and seven treated groups (n=6) which received the different doses 1200, 600, 320, 200, 100, 40, 20 mg/kg/b.w orally for 28 days. After the treatment, mice were dissected, testis were removed and weighed. Histopathological changes such as distorted seminiferous tubules, deformed germ cells, reduced leydig cells, vacuolization and clumping of spermatozoa were examined. The results revealed that the organ and body weights were reduced in treated groups significantly as compared to control group ($P < 0.05$). Pyriproxyfen treatment induces shrinkage and displacement of seminiferous tubules, decrease in diameter of lumen, and vacuolization occur in interstitial spaces at higher doses in comparison to control group. Thus, pyriproxyfen could be act as endocrine disruptor and might have detrimental effects on male reproductive system.

PO 02:**Studies on Population Fluctuations of Fruit Flies, *Bactrocera spp.* in Guava Orchard Ecosystem of Sindh, Pakistan**Abro Zain-Ul-Aabdin¹, Naheed Baloch¹, Raza Muhammad Memon² and Khuhro Niaz Hussain²¹Department of Zoology, University of Sindh Jamshoro, Sindh Pakistan.²Nuclear Institute of Agriculture (NIA), Tando Jam Sindh Pakistan.zainabro128@gmail.com**ABSTRACT:**

The population dynamics of male peach fruit fly, *Bactrocera zonata* (Saunders) and oriental fruit fly *Bactrocera dorsalis* (Hendel) were monitored from January to December 2018 in guava orchards at Hyderabad and Larkana, Sindh Pakistan. The trap catches of male *B. zonata* and *B. dorsalis* in both climatic zones shown a similar pattern during the study with a major peak in August in off seasoned guava. Whereas decreased fruit flies population obtained during the winter i.e., early December to the late February. The lowest population of male flies of *B. zonata* and *B. dorsalis* were recovered in the month of January in Larkana (16.5 ± 1.18 , 12.9 ± 1.47) and Hyderabad (19.3 ± 1.28 , 13.4 ± 1.39) respectively. The abundance of fruit flies showed significant correlation with temperature and slight negative relativity with humidity. The result suggests that high temperature enhances the fruit flies activity in connection with availability of fruiting parts. The present investigations would be helpful to attain successful MAT program in guava orchard ecosystem.

**PO 03:****Systematic Study of Family Scareabidea (Coleoptera) From District Mirpurkhas Sindh Pakistan.**

Sidra Tul Muntha, Naheed Baloch, Riffat Sultana, Javeria Shaikh.
Department of Zoology, University of Sindh Jamshoro
sidra.naseerbhatti@gmail.com

ABSTRACT:

Present Study were carried out on systematic Study of Family Scareabidea Order Coleoptera. A total of 250 specimens were collected from various localities of District Mirpurkhas and its adjoining areas. During the year 2018. Material were sort out into 3 species belong to 2 Genus and 1 family. and these species are *Melolontha hippocastani*(Fabricius, 1801), *Melolontha pectoralis*(Megerls, 1812),) and *E.humilis* (Burmeister, 1847), During the present investigation base on Systematic study. there habitat, diagnostic Character with the help of taxonomic keys, review of literature. And illustareted diagrams. And systematic position of each species.

PO 04:**Impacts of Malathion on the development and growth of Male Albino Mouse: Morphological and Morphometric Changes**

Muhammad Ameen¹, Abdul Majid Khan¹, Ayesha Iqbal¹, Rana Manzoor Ahmad², Muhammad Tahir Waseem¹, Muhammad Akhtar³

¹Department of Zoology, University of the Punjab, Lahore, Pakistan

²Department of Zoology, University of Okara, Okara, Pakistan

³Department of Zoology, Minhaj University, Lahore, Pakistan
majid.zool@pu.edu.pk

ABSTRACT:

Aim of the current study was to determine the reproductive toxicity of Malathion, a globally used pesticide drug which has irreversible effects on animals. The drug was exposed as low dose: 50mg/kg/day and high dose: 100mg/kg/day for 20 days during weaning, juvenile and post-pubertal periods of male mouse that subsequently helps to speculate the morphometric analysis of reproductive structures and body weight in male albino mice. One way ANOVA indicated a significant regression in body weight and size (weight, width, length, and density) of the testicular and accessory sex organs treated with high dose (100mg/kg/day) compared to the sham at weaning, juvenile and adult periods of treatment. These findings suggest that Malathion exhibits teratogenic effects on male mouse in terms of regression in body weight and size of the reproductive structures which can leads to growth and reproductive retardation in male albino mice.

PO 05:**Medicinal treatment options for common conditions by female students of COMSATS University, Sahiwal**

Hasan Riaz, Sameen Ahmad, Mehwish Shoaib, Uzma Manzoor, Maria Tufail
Department of Biosciences, Faculty of Biosciences, Comsats University, Sahiwal, Pakistan.
sameen8comsats@hotmail.com

ABSTRACT:

With the increasing population, diseases and health hazards are also increasing rapidly. For this purpose, a study based on a survey was conducted to evaluate the consumption and preference of medicines among female students of COMSATS University Sahiwal. The survey specifically investigated the commonly available over the counter medications for flu, fever, headache, stomach



pain, cough and depression. The study used a questionnaire survey applied to 70 students, aged between 21- 24 years. The results showed that in fever most of the students significantly (67% Vs 6%, $P < 0.05$) preferred Panadol compared to other medications in fever. In addition, the frequency of these medicine uses was variable ranging from 3.45 ± 1.54 to 10 ± 4.08 during last six months. The acquired data depicted that Panadol ($P < 0.05$) was used to cure headache by (50% Vs 13%) of the students than other medicines. Moreover, the frequency range of this medicine was 3.81 ± 2.02 to 6.80 ± 5.36 in last six months. The data analysed for stomach pain depicted that majority of the students (27% $P < 0.05$) took no medicine, while, flagyll (24% vs 17%, $P = ??$) was preferred as compared to other medicines. The frequency of these medicines in this condition varies from 1.33 ± 0.58 to 3.64 ± 2.56 respectively. In case of cough, hydraline (34.3%, $P < 0.05$) was significantly preferred compared to other medicines with frequency ranged from 3.33 ± 1.89 to 2.5 ± 1.34 . The collected data also depicted that Joshanda (42.86% vs 28.5 %, $P < 0.05$) was preferred to cure flu. Interestingly, maximum students had chosen therapies of personal likeness to cure depression. It is concluded that aforementioned medicines were preferred by the respondents over other medicines due to their easy availability and economic feasibility.

PO 06:

Estimation of Antibiotic Growth Promoters (Procain Penicillin and Colistin Sulphate) Residues in Broilers

Asif Hussain¹, Muhammad Furqan¹, Bilal Aslam¹, Faqir Muhammad¹, Muhammad Naeem Faisal¹,
Mashkooor Mohsin², Muhammad Usman Bari¹

¹Institute of Pharmacy, Physiology and Pharmacology, University of Agriculture, Faisalabad-38040-
Pakistan

cba933@gmail.com

ABSTRACT:

Antibiotics use in poultry as a growth promoter posed serious health concerns worldwide. In-depth knowledge of the presence of drug residues would be beneficial to improve human health. For maintaining good health and vigor, a balanced diet is essential to take. Protein is an important component of a balanced human diet. Poultry meat and eggs are one of the important sources of animal protein. The present study was conducted to estimate the presence of antibiotic growth promoter (Colistin sulfate) residues in broiler meat and liver. For this purpose, 15 broiler farms were selected randomly in and around the Faisalabad city. Ten samples were collected from each poultry farm having 5 samples of broiler's meat and 5 samples of the liver. Total of 150 samples including broiler's meat ($n=75$) and liver ($n=75$) were used for determination of residues of said antibiotic growth promoters. The analysis was done by using RP-HPLC. The data were subjected to statistical analysis by applying the one-way analysis of variance (ANOVA) and posthoc Duncan's Multiple Range (DMR) test. The mobile phase consisted of acetonitrile: deionized water in a ratio of 27:73 v/v. The flow rate was maintained at 1.0 ml/min and the wavelength of UV-detector was adjusted at 223 nm. It has been concluded from RP-HPLC analysis that 84 % samples of muscles and liver were Colistin sulfate positive while 16 % of samples were Colistin sulfate negative. Furthermore, it has also been concluded that 67 % of both muscles and liver samples were exceeding MRLs. Mean concentration of Colistin sulfate residues in muscle samples was 311 $\mu\text{g}/\text{kg}$ and in liver samples mean concentration was found to be 2585 $\mu\text{g}/\text{kg}$. It has been determined from results that proper withdrawal time of drugs should be determined before slaughtering of animals and farmers should also be aware of the use of antibiotics in the poultry industry.

**PO 07:****Management of Malaria without Medicine in a Tertiary Care Hospital of Sindh, Pakistan**

Ali Hassan¹, Jasarat Ilyas Jokhio², Naila Ismail³, Shweta Rajpal⁴, Rabia Chandio⁵, Sadia Umrani²,
Shabab Tariq⁶ and Kinza Fatima⁷

¹ Institute of Environmental Engineering and Management, Mehran University of Engineering & Technology, Jamshoro Sindh, Pakistan.

² Department of Zoology, University of Sindh, Jamshoro-76080, Sindh, Pakistan.

³ FCPS Gynecology Resident, Liaquat University of Medical & Health Sciences Jamshoro Sindh.

⁴ FCPS Medicine Resident, National Institute of Cardiovascular Diseases (NICVD) Karachi, Sindh.

⁵ Institute of Nursing, Dow University of Health Sciences, Ojha Campus, Karachi Sindh.

⁶ Department of Physiology and Medical Laboratory Technology, University of Sindh, Jamshoro.

⁷ Jinnah Post Graduate Medical Center, Karachi Sindh, Pakistan.

alitajwani@gmail.com

ABSTRACT:

Malaria is very dangerous diseases caused by plasmodium types. About 3-5 million deaths are reported annually due to the Malarial parasite globally. Pakistan is one of the 109 countries where Malaria is endemic. Malaria is caused by the species of *Plasmodium falciparum*, *Plasmodium malariae*, *Plasmodium vivax* and *Plasmodium ovale*. In Pakistan *P.falciparum* and *P. vivax* are the prevalent infecting parasites. Pakistan the two major vector species are *Anopheles culicifacies* and *Anopheles stephensi*. *Anopheles* typically breeds in the natural water bodies with clean, slow moving, warm water, with sufficient aquatic vegetation. However, ecological requirements of particular species may deviate from these typical conditions; *An. stephensi* can easily breed in closed artificial containers and *An. claviger* prefer relatively cold water. In Karachi, this disease was known from environmental studies as most prevalent in all types of climates. A cross sectional study was carried out by many physicians and malaria case managers in a tertiary care hospital of Karachi Sindh. Malaria patients were included as malaria is a global health emergency prevalent in the third world countries especially in the tropical regions. There are different medicines used for the treatment of Malaria in Sindh. Artesunate, Chloroquine and other anti-malaria medicine are successful in its treatment but there is resistance to the said drugs is widespread, which needs a great solution for its long term eradication and treatment. In the present cross sectional study, more than 300 patients of all age groups and genders were selected randomly with parasite of malaria positive cases. After diagnosis, the patients were counseled to start this type of treatment for the best possible result with consent in written. There was not a single tablet of Chloroquine etc given to any of the patient under study. A new and unique treatment was experimentally given which was the mixture of tea leaves and the lime juice. The mixture was given to the patients to drink three times daily followed by the proper feeding of the meals. The patients were strictly observed, outreached and monitored to drink the prescribed material consecutively for 13 months. A good clinical outcome was obtained and all the patients got completely cured from Malaria. This study has opened the doors for the further research on the same topic.

**PO 08:****Histopathological alterations in the gills of the fish exposed to endosulfan**

Farhana¹, Asma Noureen¹, Javed Iqbal², Khurshied Ahmad Khan³, Muhammad Ishaq Asif Rehmani²

¹Department of Zoology, Ghazi University, Dera Ghazi Khan, Pakistan

²Department of Agronomy, Ghazi University, Dera Ghazi Khan, Pakistan

³Department of Agricultural Engineering and Technology, Ghazi University, Dera Ghazi Khan, Pakistan

agul99603@gmail.com

ABSTRACT:

The organochlorine pesticide endosulfan is considered highly toxic for aquatic organisms. Despite the fact that the US Environmental Protection Agency has included it in top pollutants, it is still being applied in several developing countries to control jute, sugarcane and cotton pests. Due to its large scale use in surface layers of soil and water it is reported to cause acute toxicity in fish. Fish gills are important respiratory and osmoregulatory sites having extensive surface area and are directly exposed to environmental pollutants, therefore serve as vulnerable indicators of aquatic pollution. Endosulfan exposure induce several histopathological alterations in fish gills that include lifting of epithelium of gill lamellae, increased thickness of lamellar epithelium, lamellar fusion, separation of epithelium from lamella, lamellar edema etc. As endosulfan causes changes in fish gills and it is transferable to human beings through food chain so it should be used wisely.

PO 09:**Use of Molecular taxonomy for identification and Phylogenetic Analysis of some fresh water fishes**

Beenish Nadeem & Shumaila Mushtaq

Department of Zoology, Govt. College of Science, Wahdat Road, Lahore Pakistan

beenishmuhammadnadeem@gmail.com

ABSTRACT:

DNA Barcoding is a molecular based taxon identification method, which has received much attention in recent times. It is further established through global initiative BOLD System (barcode of life data system). It seeks sequence diversity in a 658 base pair fragment near the 5' end of mitochondrial cytochrome C oxidase subunit 1 (CO1) gene. This region is known as "barcode" and is used as a tool for species identification. DNA barcoding is equally useful in juveniles as well as adult stages of fishes and also processed/damaged specimen. Present study was conducted to identify some fresh water fishes from River Ravi by using DNA barcoding technique. Partial sequence of CO1 gene was amplified by using conventional PCR method. After sequencing the PCR product, it was analyzed by using different soft wares like Bio edit, BLAST (Basic Local Alignment Search Tool) and MEGA7 (Molecular Evolutionary Genetic Analysis) and dnaSP v5, Results showed that morphologically identified fish was the same as genetically identified fish. It was further observed that CO1 gene is very effective for study of Phylogeny and evolutionary study of a particular fish or any animal species.

**PO 10:****Novel Approach towards Vaccine Development through Nanoparticles**Iqra¹, Muhammad Naeem², Ahmad Munir²¹Department of Biochemistry and Molecular Biology, University of Gujrat, Pakistan²Department of Biochemistry, University of Agriculture, Faisalabad, Pakistaniqrasaddiqui123@yahoo.com**ABSTRACT:**

Nanotechnology is used in vaccine development especially in medical field for diagnosis of many infectious and chronic diseases. The development of vaccine proves to be very beneficial in the controlling of fatal diseases. Different nanoparticles during nanomedicine formulations designed for their use in promoting of the safe immune response. In order to increase antigen processing, various nanoparticles are used to advance immunity where they might be used as adjuvant. Nanotechnology widely used in medicine for diagnosis by developing nanoparticles of different composition, shapes and sizes. As there lack of understanding in vivo particular response of various nanoparticles that may operate as delivery system to increase antigen processing. Nanotechnology provides most recent advances in field of nanovaccinology with the aim of uses of nanoparticles based antigen delivery vehicle and their use in medical field in treating of various diseases. Interaction of nanoparticles with cells of body immune system and their characteristics are focused. There is need to more understanding of nanoparticles action in immune stimulatory, various delivery modes in addition to their behavior in vivo and also designing of nanoparticles containing vaccines.

PO 11:**Pesticides mediated changes in total protein content in different body tissues of freshwater fish**Jamil Ahamd¹, Asma Noureen¹, Allah Bakhsh Gulshan², Saleem Akhtar³, Khurshied Ahmad Khan⁴,
Muhammad Ishaq Asif Rehmani²¹Department of Zoology, Ghazi University, Dera Ghazi Khan, Pakistan²Department of Botany, Ghazi University, Dera Ghazi Khan, Pakistan³Department of Zoology, Government College University, Faisalabad, Pakistan⁴Department of Agricultural Engineering and Technology, Ghazi University, Dera Ghazi Khan,
Pakistan⁵Department of Agronomy, Ghazi University, Dera Ghazi Khan, Pakistanagul99603@gmail.com**ABSTRACT:**

Proteins are macromolecules that are basic structural components of the cell. They play role in physical and chemical activities to maintain the cellular homeostasis. Now a days, a broad use of pesticides for pests control in agriculture to enhance the crop productivity is the root of chemical pollution. The pesticides are more effective to non-target organisms like fish. The organophosphate pesticides like malathion and chlorpyrifos and synthetic pyrethroids including lambda-cyhalothrin and cypermethrin along with herbicides e.g. butrill, can affect the total protein content of the kidney, liver and gills etc. of several freshwater fish fauna like *Labeo rohita*, *Oreochromis mossambicus* and *Channa gachua*. Studies report that acute exposure of pesticides causes significant reduction in total protein content in gills, kidneys, hepatic and intestinal tissues of fish and resulting metabolic dysfunction. Pesticides induce stress in fish leading to proteolysis to compensate for increased energy demand and affect the functional capabilities of vital body tissues.

**PO 12:****The Incidence of Bird Parasites in the Oral Cavity of Patients under Treatment in Jinnah Postgraduate Medical Center (JPMC), Karachi Sindh, Pakistan**Kinza Fatima*¹ Jasarat Ilyas Jokhio² and Saima Naz²¹ M.S Resident Scholar in Oral and Maxillofacial Surgery, Department of Dentistry, , Jinnah Postgraduate Medical Center, Karachi, Sindh, Pakistan.²Department of Zoology, Advanced Parasitology Research Laboratory, University of Sindh, Jamshoro-76080, Sindh, Pakistan.

jasaratilyas@gmail.com

ABSTRACT:

Oral and Maxillofacial Patients come with variety of infections among which parasitic infections are rarely prevalent. Oral Carcinoma and related malignant infections patients have a large complex situation with a long history of the oral infections. As per the dental surgery and dental science protocols, the patients are treated after proper diagnosis and planning. There were 50 patients who were extracted for biopsy and their cavity was washed. During the microscopic examination, it was found that some organisms were present evidently in the cavity mass of 2 patients. The found materials were sent to the diagnostic laboratory for further identification and it was found that one of the 2 materials is *Gongylonema pulchrum* (Molin, 1957), which is a multicellular nematode. Its transmission to humans is due mostly to unsanitary conditions and the ingestion of infected coprophagous insects, mostly dung beetles and cockroaches. Beyond direct ingestion of infected intermediate hosts (insects), foods can become contaminated if unsanitary conditions pervade in the production of the food- coprophagous insects are found in the food, or in the production chain. Also, contaminated water sources, again with the intermediate hosts or the infective third stage larva, can lead to transmission to humans. The infection usually occurs when someone drinks contaminated water, or consumes an infected beetle. The buccal mucosa, which is the ideal environment for the parasite, is the mucous membrane of the inside of the cheek. It is non-keratinized stratified squamous epithelium, and is continuous with the mucosae of the soft palate, the undersurface of the tongue and the floor of the mouth. Infections of *G. pulchrum* are not a huge public health concern. There have only been 50 recorded infections worldwide since the first reported case in 1850. The infections of *G. pulchrum* have been widespread, and countries reporting human infections include the United States, Germany, Iran, Japan, Laos, Morocco, China, Italy, New Zealand, and Egypt, among others. Control measures for reducing infections include making sure vector and larval contamination of food and water sources does not occur- this could be included in basic sanitary practices. Another control measure is ensuring children and adults do not accidentally or purposefully ingest infected dung beetles and other coprophagous insects.

PO 13:**New record of family Libellulidae dragonflies (Arthropoda: odonata) from District Matiari, Sindh**

Jaweria Shaikh, Naheed Baloch, Barkat Ali Bughio and Sidra-tul-Muntha

Department of Zoology, University of Sindh, Jamshoro

jiashaikh124@gmail.com

ABSTRACT:

Current study was conducted on new record of family Libellulidae dragonflies collected from the different areas of District Matiari, Sindh. A total 366 specimens were collected and identified into 5 genera covering 5 species of dragonflies present in District Matiari namely *Bradinopyga geminata* (Rambur, 1842), *Orthetrum sabina* (Drury, 1770), *Chrocothemis servilia* (Drury, 1773), *Pantala flavescens* (Fabricius, 1798), *Diplacodes trivialis* (Rambur, 1842). They are beneficial for our environment and our health because they eat harmful insects.

**PO 14:****The Prevalence of Helicoverpa Armigera on the Tomato Crop in District Tando Allahyar, Sindh Pakistan**

Sadia Umrani, Mansoor Ali Shah, and Nasreen Memon
sadia.baloch67@gmail.com

ABSTRACT:

Helicoverpa armigera is a polyphagous notorious pest of a number of economic crops including tomato. H. armigera is a pest of major importance in most area wherever it occurs, damages a wide variety of horticultural and agricultural crops. It is widely distributed in Africa, Oceania and Asia. In Pakistan, the studies have been done but there is no work done on tomato crop in district Tandoallahyar, Sindh so the population data was taken from the district from August 2018 to April 2019. Cross sectional investigation was done using the map of district. Screening of the tomato crop genotypes was conducted in the different agricultural fields of district and the Helicoverpa armigera was picked mechanically by hands and was saved alive/ dead in the shopper prior to the laboratory studies. Finally it was statistically counted. The results tell the prevalence of Helicoverpa armigera is present highly in District Tandoallahyar. Total 02 agricultural fields i.e. Dero Farm (tunnels not infested while as without tunnels more infestation was recorded and Village Umer Kakepota (average 2 acres per field in area) were visited in the study. The total number of 43 H. armigera were collected (33.5% P. rate) from 02 fields which show the high prevalence rate of H. armigera in the district. Further studies are continuing on its prevalence of tomato crops.

PO 15:**Use of probiotics and prebiotics instead of antibiotics as an antimicrobial to improve the public health.**

Hira Hashim and Aisha Waheed Qurashi.
Department of biology, Lahore Garrison University DHA phase-VI Lahore, Pakistan.
fa14-msmb-12@lgu.edu.pk

ABSTRACT:

With the increase in world population the public health is at risk of antibiotic resistance which is increases day by day due to excessive use of antibiotics. The antibiotics used at poultry, dairy and food industry directly effect the public health. The antibiotics used in industry transferred to community and causes antibiotic resistance. Due to which the antibiotic growth promoters are banned in many country for health safety. It increases the researchers to find out new strategies to improve the production. To over come this problem alternative, effective and efficient approach is required. Moreover, new biotechnological products like nano-encapsulated multiplex are being inconvenient due to its high cost. Therefore, a low cost, simple, intrinsic and receptive approach which is the use of probiotics and prebiotics instead of antibiotics. Probiotics are the health promoting viable microorganisms that exhibit a beneficial effect on the health of organisms by improving the intestinal balance while prebiotics are the chemical on which probiotics relay. Use of prebiotics and probiotics have significant effect in food industry. It control the bacterial contamination and enhance the growth rate by colonizing into the gastrointestinal tract. Furthermore, they have unique ability to compete with pathogen by adhesion with the host surface and have significant promising outcomes against different enteric pathogens. It regulate the immune response of host by initiation of specific gene activation inside and outside the intestinal tract of host. Probiotics also regulate the stimulate the intestinal angiogenesis and fats storage. The aim of this study to emphasize the possible beneficial effect of probiotics in various industries and human health.

**PO 16:****Prevalence and Severity of Epilepsy in District Chiniot, Pakistan**Dr. Muhammad Sajjad Ansari¹, Asif Bilal Syed²¹ Division of Science and Technology, University of Education, Township, College Road, Lahore² The University of Lahore, Sargodha Campus
2018-mphil-1606@uvas.edu.pk**ABSTRACT:**

Epilepsy is a common medical and social disorder or group of disorders with unique characteristics which depends upon many factors like genetic, birth complication, proper treatment and associate condition in this project prevalence and severity of epilepsy was checked in district Chiniot. Data was collected from patient, Neurologist, and specialist doctors by questionnaire. 19.5% females and 80.5% males were found suffering from this disorder. Among these patients, 22.5% patients belong urban while 77.5% patients belong to rural area. In birth history, 2.5% premature while 1.25% post-term people were suffering from this disease. A single case was reported with increase in head region at birth time and in single case head region was damage during birth. People awareness was recorded as 76.5% while 23.5% were not aware about this disorder. In treatment, 80% people were getting proper medical treatment while are remaining 20% were without any medical treatment. Among under treatment persons 46.25, 17.5, 36.25% people were getting treatment from neurologist, primary care physician and either family based treated, respectively. Results of Seizure type showed 62.5% Atonic, 55% Myoclonic, 10% Tonic-Clonic and PNES while 5% patients were Prolonged febril, Infantile and Petitmal. Age is a big factor in this disease occurrence 16.25% patients were in age of (0-2 years), 12.5% patients in age of (3-8 years), 46.25% patients in age of (9-18years), 22.5% patients in age of (19-45 years), 2.5% patients were in age of (46-65 years) and above age of 66 years no patients were found. So it can be concluded from this study that males are more suffering from disorder. There is no proper facility in hospitals of Chiniot against this disorder. People are not aware, how to treat with this so it is big cause of increasing epilepsy. According to Doctors, 1 to 2 percent of people from the whole population of the district are suffering from this disorder.

PO 17:**Biodiversity and Morphology of Ants (Hymenoptera: Formicidae) inhabiting on Mango trees from Tando Allahyar, Sindh, Pakistan**Asif R. Soomro, J. A. Khokhar, T. J. Ursani, Samina Malik and Ali R. Soomro
Department of Zoology, University of Sindh, Jamshoro- 76080 Pakistan
a.r.83soomro@gmail.com**ABSTRACT:**

Associations of ant fauna is vital for agriculture. Like earth worm is famous for the soil fertility, bees with pollinations, mantids and spiders with pest control, house fly cleanses of debris etc in the same way the ants perform all roles (Predators, Scavengers, Pollinators, Soil turners mean soil fertility and sometimes pests also) in the ecosystem. They are social insects having a variety of colors. This study is based on the biodiversity of ants associated with mango trees grown in Tando Allahyar. Collection was made from mango tress using bait like chicken visceral, sweets and insects while putting this bait on white paper sheets. Total 2096 specimens were collected and sorted out into six species and five genera. Identification was done keys given by Bolton, 1994 and Sheela, 2008. This is the first reported research work from Sindh, Pakistan.

**PO 18:****Diversity and Ecology of Ants (Formicidae) from Naushahro Feroze, Sindh, Pakistan**

Imdad A. Channa, J. A. Khokhar, T. J. Ursani, Samina Malik, & Asif R. Soomro
Department of Zoology, University of Sindh, Jamshoro- 76080 Pakistan
khokharjawaid@gmail.com

ABSTRACT:

The study was carried out from District Naushahro Feroze (located 26° 50'24" N 68° 07' 12" E) with altitude 38 meters. Diversity of ant's fauna occurring in an ecosystem has diverse and versatile importance. Because of their huge number and functions like soil fertility, predacious, scavenger, pollinators and pest exterminators. They are social insects living in colonies having different cast i.e workers, drone, queen and soldiers. Five colonies were studied and total 50 specimens of each colony were collected and preserved into 75% ethanol with few drops of glycerin. Collections were made by hand picking and using bait (sweets and chicken visceral) and arranged into fifteen species and five genera. Identification was prepared using keys given by Bolton, 1994; Sheela, 2008; Naumann, 1993 and McArthur, 2001. Pictures were captured by Stereoscopic microscope with LED and digital Camera.

PO 19:**Prevalence of Enterotoxemia in Sheeps and Goats of District Kohat KP**

Muhammad Moaz Ashraf¹ Rabia Nousheen², Amir Khan,¹ Kenza Javed¹, Farman Ullah Dawar¹,
Syed Ishtiaq Anjum¹, Irum Gul¹, Sunmbal Haleem¹, Naila Gul¹, Rafiq Hussain¹ And Kalim Ullah^{*1}
¹Dept of Zoology, KUST, Kohat, KP
²Dept of Botany, KUST, Kohat, KP
dr.kalim@kust.edu.pk

ABSTRACT:

Enterotoxemia caused by *C. perfringens* type D is an important disease of sheeps and goats with a worldwide distribution. *C. perfringens* is an important anaerobic spore-forming gram-positive, non-motile, rods bacteria. The study was conducted to report the occurrence of the *C. perfringens* in sheeps and goats of the district Kohat and to explore risk factors associated with enterotoxemia in sheeps and goats. A total of 150 samples (40 from sheeps and 110 from goats) were collected from different Government Veterinary hospital and Private veterinary health care center of district Kohat in the span of six months i.e. from February 2019 to June 2019. Sera sample were tested through ELISA test using ELISA kit (Bio-X, Jemelle, Belgium). Overall 64 (42.6%) samples were found positive in which 20 (50%) were sheep and 44 (40%) were goats. The high prevalence was observed in female gender 13(54.16%) as compared to male gender 7 (43.75%) in sheeps and female gender 29(46.77%) shown the high prevalence from the male gender 15 (31.25%) in goats. Similarly the highest prevalence of *C. perfringens* toxin type D was observed in lambs (66.66%) and kids (45.90%) followed by adults and higher age groups of sheeps and goats. The high prevalence of *C. perfringens* was observed in sheeps than goats. The lower age positively contributed to this disease both in sheeps and goats. The severity of disease and mortality may be associated with the presence of toxins in both sheeps and goats.

**PO 20:****Serological changes in Nile Tilapia (*Oreochromis niloticus*) after acute exposure to Malathion**Amina Zulfiqar¹, Roheela Yasmeen², Sumaira Ijaz¹¹Government Postgraduate Islamia College for women, Cooper Road, Lahore, Pakistan²Department of Biology, Lahore Garrison University, Lahore, Pakistan
aminazulfiqar1993@gmail.com**ABSTRACT:**

The present study was conducted to evaluate the serological changes (urea and creatinine) in the kidneys of Nile tilapia (*Oreochromis niloticus*) after acute exposure to malathion. Four groups of 15 fish were made each and categorized as; Group A: (control group) and Group B, C and D (experimental groups). The LC₅₀ of malathion was 2 µg/L at 96 hours of exposure in Nile tilapia. The fish were exposed to sub-lethal concentrations of 0.5, 1.0 and 1.5 µg/L to group B, C and D respectively. Blood samples were collected after 48, 72 and 96 hours exposure to malathion. Serum was separated and analyzed for serological parameters such as urea and creatinine. The level of urea and creatinine was significantly enhanced after acute exposure to malathion at 48, 72 and 96 hours. Moreover, morphological and behavioral changes and mortality rate were also recorded. The results revealed that the pesticide has an adverse effect on kidneys. High levels of malathion result in kidney damage and serological alterations in Nile tilapia.

PO 21:**Evaluation of cleaning agents by their application on bacteria isolated from meat shops**

Noor Ul Aeen and Mehwish Khan

¹Government Postgraduate Islamia College For Women, Cooper Road, Lahore, Pakistan
noorulaeen12@gmail.com**ABSTRACT:**

Meat, by their nature are nutritious and easily metabolisable and therefore provide suitable substrates for the growth and metabolism of microorganisms. Food borne disease is a major problem caused by consumption of contaminated meat. The microorganisms that ultimately bring about the spoilage of flesh foods are either present at the time of slaughter, or introduced by workmen and their cutting tools, or by water and air in the dressing, cooling and cutting rooms. Meat is an ideal medium for many organisms to grow because it is high in moisture, rich in nitrogenous compounds (e.g. amino acids, peptides, and proteins) and plentifully supplied with minerals and accessory growth factors. Therefore in this study, an attempt has been made to study the microbial contaminants of meat sold in market places. The bacterial contaminants were isolated and identified using specific culture techniques. The predominant bacterial pathogen isolated was *Escherichia coli*, *Salmonella* spp., *Staphylococcus aureus* and *Pseudomonas*. present study revealed that different types of microorganisms vary in their response at different concentration of cleaning agents (Dettol, safeguard, vinegar & lemon juice). Each cleaning agent show their maximum effectiveness at 0.1ml concentration and minimum effect at 0.0001ml. Growth of bacterial culture was measured by measuring the optical density of medium which is directly proportional to the bacterial growth. Thus the present study were conducted to evaluate the effect of cleaning agents on bacteria isolated from raw meat. The fact that raw meat is heavily contaminated with the high incidence of bacterial pathogen. Therefore there is an urgent necessity to minimize the contamination of meat sold in market places by the implementation of cleaning agents.

**PO 22:****Generation of recombinant plasmid for DNA-based vaccination of fish**

Nimra Tahir, Naila Malkani and M. Imran Sohail
Department of Zoology, GC University Lahore
imransohail@gcu.edu.pk

ABSTRACT:

Aquaculture is one of the fastest growing sectors of agriculture over the past few decades. With such rapid growth, there is a continuous threat of disease emergence. Although a variety of chemicals and antibiotics are used, high cost and environmental toxicity are major concerns associated with use of these agents. Therefore, DNA-based vaccination is gaining popularity now-a-days. *Vibrio anguillarum* is one of the important aquaculture pathogen that is associated with disease outbreaks in wild and cultured fish species. In this study we will construct DNA-based vaccination against *Vibrio anguillarum* gene. Outer membrane protein K (OmpK) is an immunogenic protein that could act as subunit vaccine candidate for *V. anguillarum*. In this study we will construct DNA based vaccination using Ompk gene of *V. anguillarum* and pcDNA3 as expression vector. Fish will be immunized with pcDNA3-Ompk by intramuscular injection. It is expected that the fish will show significant production of specific anti-*V. anguillarum* or anti-rOmpK antibodies, which will indicate the activation of humoral and cellular immune response after vaccination.

PO 23:**Predominance of different types of Posterior Corneal Dystrophy in Lahore: Estimates of different hospitals**

Shagufta Naz, Zoya Asad, Saima Sharif, Syeda Aqsa Amjad, Tasnim Farasat, Farkhanda
Manzoor

Department of Zoology, Lahore College for Women University, Lahore
shagufta6@gmail.com

ABSTRACT:

A retrospective, analytical study was performed from September 2018 to June 2019 on patients of endothelial corneal dystrophy visiting various hospitals of Lahore including General hospital, Mayo hospital, Layton Rahmatullah Benevolent Trust hospital, Al-Ehsan eye hospital, Sheikh Zayed hospital and Mughal eye hospital during their consultation with ophthalmologists. The basic aim of this research was to determine the prevalence of different types of Posterior corneal dystrophy in Lahore population. Data was collected on the basis of relevant parameters such as age, gender and visual acuity. The assessment of visual acuity was done by using Snellen chart. In the current study, about 136 patients of Posterior corneal dystrophy were identified out of which 47% (n=64) were females and 53 % (n=72) were males. The most represented age group was 41-50 years with the prevalence of 29.41% (n=40). The results of recent research finalize that posterior corneal dystrophy is a rare disease prevailing in Pakistan with a proportion of only 6.18 %. This study benefits in updating the data about predominance of posterior corneal dystrophy in Pakistan. Careful clinical evaluation, early diagnosis, genotyping, genetic counseling and proper treatment are necessary for the restoration of vision loss caused by the disease and possible therapies should be done to avoid the severe outcomes caused by posterior corneal dystrophy.

**PO 24:****Evaluation of dietary inclusion of Banaspati Ghee on renal function in mammalian model**

Asna Ali and Dilara Abbas Bukhari

Department of Zoology, Lahore College for Women University, Lahore

asnaali1031@gmail.com**ABSTRACT:**

The ideal consumption of fat in diet is one of the main unresolved issues in the field of diet. A high fat consumption in diet is appealed to be responsible for obesity. Structural and functional variations like glomerular hyperfiltration, glomerular basement membrane thickening, mesangial cell proliferation, mesangial matrix thickening, expansion of Bowman's capsule, podocyte hypertrophy comparable to diabetic kidney disease occur early during metabolic syndrome, induced by obesity. To, investigate the effect of dietary inclusion of commercially available Banaspati ghee on renal function in mammalian model, mice were fed with commercially available HFD with 20% of energy from fat for experimental groups or normal diet with 7% of energy from fat for control groups for 45 days. After 45 days, a gradual increase in the body weights of mice fed with HFD as compared to control mice, occurred. Renal function was measured by applying biological markers of renal function test i.e. creatinine and urea. A rise in concentration of urea and creatinine in blood serum was observed, a decline in serum-creatinine level in female mice was also observed. In conclusion, this study proposes that an addition of high fat content in diet produces obesity which ultimately leads to the development of renal injury associated with metabolic syndrome and systemic metabolic changes. All these changes cause loss of renal function in mice as indicated by high level of serum-urea and creatinine.

PO 25:**Evaluation of Growth Parameters for Optimum Production of Polyhydroxybutyrate**Mahnoor Bano¹, Maria Mushtaq² and Mafia Shafiq³Department of Zoology, Govt. College for Women Gulberg, Lahore, Pakistan¹Food and Biotechnology Research Centre², Pakistan Council of Industrial and Research Centre,Lahore, Pakistan³mahnoor.bano1262@gmail.com**ABSTRACT:**

Polymeric materials like plastic and polyester have wide-spread use but it is resulting into problems of solid waste management and global environmental pollution. There is a growing interest in developing biodegradable plastics such as polyhydroxybutyrate (PHB). The study aimed at screening of PHB producing strain and optimizing parameters for increased PHB production by a *Bacillus thuringiensis* strain CMBL-BT-6. Sudan Black B dye was used for the identification of PHB granules. PHB extraction was done by acetone alcohol method. For optimization purpose, *B. thuringiensis* was incubated for different time periods i.e. 24, 48, 96, 120, 144 hours, pH i.e. 2, 3, 4, 5, 6, 7, 8, 9 and temperatures i.e. 4, 18, 21, 25, 30, 35, 37, 40°C. *Bacillus thuringiensis* CMBL-BT-6 produced 2.75g/L PHB at pH 7.0, when incubated at 37°C for 24 h. Results indicated that PHB production increased by rising time, temperature and incubation period to optimum range.

**PO 26:****Microbial production of Zinc bacitracin by submerged fermentation technology**

Ali Hassan, Muhammad Adeel Farooq and Shaukat Ali

Department of Zoology, Government College University, Katchery Road, Lahore, Pakistan

hassangc13@gmail.com**ABSTRACT:**

Bacitracin is one of the important antibiotics used in different biomedical fields. When the bacitracin is precipitated with the zinc salt, it is converted into Zinc bacitracin. This form of bacitracin is commonly used in the poultry industry to minimize the disease incidence. This, ultimately, results in the low mortality rate in chickens. Thus, the current study was concerned with the synthesis of low cost and more effective bacitracin utilizing mutant strains of *Bacillus licheniformis* and *Bacillus subtilis* employing the technique of submerged fermentation. The bacteria were exposed to the UV irradiation for various time periods ranging from 5-40 mints. The mutant strain of *Bacillus licheniformis* that was exposed to UV- irradiation for 25 mints produced maximum bacitracin with significantly highest activity (142.81 IU/mg) against *Klebsiella pneumonia* but less activity against *Escherichia coli* (115.19 IU/mg). Zinc bacitracin produced from BSAA-25 also showed significantly highest activity against *Klebsiella pneumonia* (131.26 IU/mg) and *Escherichia coli* (120.25 IU/mg). Several fermentation conditions and culture were investigated to optimize the conditions for maximum Zn-bacitracin production. The fermentation media containing soybean meal substrate was most effective for the production of high activity (142.81 IU/mg) bacitracin. The maximum activity (135.05 IU/mg) of Zn-bacitracin was found at the pH=7 in the case of *Bacillus licheniformis*. While in the case of *Bacillus subtilis*, the maximum activity (135.41 IU/mg) was recorded at pH=8. Comparison between commercial and experimentally produced Zn-bacitracin showed that commercial bacitracin has low activity (63.2 IU/mg) as compared to experimental bacitracin. So, the optimum condition for bacitracin production is fermentation media containing soybean meal, 37°C, pH=7, inoculum 10% and the fermentation period of 48 h. Hence, the synthesis of Zn- bacitracin increased by mutation and utilizing different substrate.

PO 27:**Digitization of Pakistani Herbaria and Botanic Gardens: An Approach for Data Mobilization**

Ghulam Yaseen, Mushtaq Ahmad, Muhammad Zafar, Shazia Sultana

Department of Plant Sciences, Quaid-i- Azam University Islamabad-Pakistan

ghulamyaseenawan@gmail.com**ABSTRACT:**

Pakistan being endowed with variety of climates, ecological precincts and topographical regions is gifted with inimitable biodiversity encompassing wide range of species. Pakistan has 17 -18 registered and several unregistered herbaria that range in size from 1,000 to 180,000 specimens. There are more than 15 functional botanical gardens in Pakistan where conservation is carried out to protect threatened plant species, but such gardens are not established to protect the threatened species of deserts in Pakistan. Several active plant taxonomists, many of whom have, or are working on documented checklists for different parts of the country. In addition, *Flora of Pakistan*, which has been written almost entirely within Pakistan, which is almost complete, includes over 30,000 specimen citations. All these herbaria and botanic gardens either not digitized or have very limited number of digitized specimens. The digitization of herbaria and Botanic gardens can be done using very basic equipment including barcodes and barcode scanners and can be expressed interest in working together on increasing access to records in their collections. None are currently providing



data to data mobilization organization and networks such as GBIF. Despite this wealth of floristic activity, Pakistan is poorly represented in many biodiversity organizations such as GBIF, with most specimen records coming from in the northern mountains. The digitization of Herbaria and Botanic Gardens can focus on persuading Pakistani taxonomists, those who evaluate their work, and additional Pakistani herbaria and botanic gardens that integrating biodiversity data mobilization into their research and teaching is not just beneficial but, increasingly, essential. As part of this component, we shall engage representatives of additional herbaria and botanic gardens in data mobilization, creation of new resources, and formation of collaborative projects. This engagement is an important aspect of our sustainability strategy.

PO 28:

Estimation of Antibacterial And Antioxidant Potential of *Mallotus phillipensis*

Rimsha Dilshad and Rida Batool

Department of Microbiology and Molecular Genetics, University of the Punjab Lahore, Pakistan
asma.phd.mmg@pu.edu.pk

ABSTRACT:

Phytochemicals present in medicinal plants are a major source of imparting different characteristics to the plant. Antibacterial and antioxidant activity of these bioactive compounds was tested in ethanol and ethyl acetate extracts of four medicinal plants i.e. *Ziziphus jujube* (Unaab), *Fagonia arabica* (Dhamasa Booti), *Mallotus phillipensis* (Kameela) and *Hemidesmus indicus* (Ushba). Phytochemical analysis of these plants revealed the presence of alkaloids, carbohydrates, cardiac glycosides, flavonoids, phenols, phlobatanins, reducing sugars, saponins, steroids, tannins and terpenoids in them. Agar well diffusion assay revealed maximum inhibition zone of extracts against *Bacillus* strain (4-11mm) while for *Pseudomonas* strain no considerable inhibition (1-3mm) was observed by either of the extracts. Minimum inhibitory concentration of Kameela ethyl acetate extract was 62.5mg/L. Kameela extract was found to exhibit maximum bacterial efflux pump inhibition potential (155%). Twelve components of extracts were separated by TLC. Component showing antibacterial potential was subjected to GCMS analysis which indicated phthalic acid to be the component responsible for this activity. Significant antioxidant activity was also observed from *Mallotus phillipensis* extract. Phthalic acid, responsible for antibacterial activity of plant extract, can be used in medicine industry to treat certain bacterial infections.

PO 29:

Bio-Plastic producing bacteria; A sustainable and environment friendly approach

Naima Khan and Nazia Jamil

Department of Microbiology and Molecular Genetics, University of the Punjab,
Quaid e Azam Campus, 54590 Lahore.
asma.phd.mmg@pu.edu.pk

ABSTRACT:

Importance of polyhydroxyalkanoates cannot be underestimated regarding its properties and sustainable nature. Increasing plastic waste – synthetic, non-biodegradable, hazardous and unsustainable – has increased the value of bioplastics. In this study we isolated different bacteria from stressed environment. The bacteria were screened on basis of their polyhydroxyalkanoate producing ability. Nile red and Sudan black B staining was used for preliminary detection of PHA producing strains. Isolated strains were able to grow in as much as 3M NaCl stress. Bacteria growing under salt stress can be used in open culture thus reducing the need of sterilization. In this way the production can be made cost effective. Seven different strains were isolated on the basis of their properties – PHA accumulation. Our strains were able to produce as much as 60 percent of intracellular PHA. Fourier-transform infrared spectroscopy (FTIR) and GC-MS then confirmed the presence of carbonyl functional group in extracted samples and suggested that extracted material belong to mcl. Polyhydroxyalkanoates. Further *phaC* gene was amplified using different set of Primers.

**PO 30:****Disparities of trace elements in colorectal cancer patients in comparison with healthy subjects**

Muhammad Abdul Qayyum¹, Zahid Farooq², Muhammad Yaseen¹, Mian HR Mahmood¹
¹Department of Chemistry, Division of Science & Technology, University of Education Lahore,
Pakistan

²Department of Physics, Division of Science & Technology, University of Education Lahore Pakistan
hmaqayyum@ue.edu.pk

ABSTRACT:

Colorectal cancer (CRC) is the 3rd and 2nd most common cancer, respectively, in men and women worldwide and is a major cause of morbidity and mortality. It is increasing in Pakistan at an alarming rate yet little is known of the impact this increase will have on society. Environmental and genetic factors are basic contributors to this increase. Deficiency or excess of toxic elements play a vital role in the development of CRC cancer. The aim of the present study was to quantify the elemental levels (nickel-Ni, mercury-Hg, arsenic-As, selenium-Se, copper-Cu, cadmium-Cd, zinc-Zn, iron-Fe, chromium-Cr and lead-Pb) in the blood serum of CRC patients and counterpart healthy subjects by flame atomic absorption spectrometry. Average concentrations of Ni, As, Cd and Pb were significantly higher while Se, Cu, Zn and Fe levels were lower in the serum of the CRC patients compared to the healthy subjects. Nonetheless, the mean level of Hg was higher in the serum of CRC patients in comparison with healthy subjects but the difference was not statistically significant. Likewise, the concentration of Cr was not dissimilar in the serum of CRC patients and healthy subjects. The correlation study revealed significantly divergent mutual variations among the elements in CRC cancer patients and healthy donors. Most of the elements exhibited significant disparities in their concentrations based on gender, abode, dietary habits and smoking habits of the CRC patients and healthy subjects. Variations in the elemental levels were also observed for various cancer types (adenocarcinoma, gastrointestinal stromal tumor and primary colorectal lymphoma) as well as stages (I, II, III and IV) in the patients. Multivariate apportionment of the elements in the serum of the CRC patients and healthy subjects are also significantly diverse. Consequently, quantification of elements in the blood serum of the CRC patients demonstrated prolific data; not only as a diagnostic method but also in providing answers pertaining to the treatment.

PO 31:**Investigating the antimicrobial activity of honey bee gut microbiota (*Apis cerana*)**

Maleeha Anwar Ch. and Iram Liaqat
Department of Zoology, GC University, Lahore.
iramliqt@gmail.com

ABSTRACT:

In this study, antimicrobial activity of honey bee gut bacteria is investigated against pathogenic strains, *E. coli*, *Salmonella*, *Klebsiella*, *Bacillus subtilis*, *Bacillus licheniformis* and *Pseudomonas*. Gut bacteria were isolated and morphological identification was done. Antimicrobial activity of cell free supernatant of isolated LAB was checked by agar well diffusion method. Result revealed that highest activity was shown by strain M4 against all pathogens while strain M5 showed least. Isolate B1 also showed great activity against all pathogens except *Pseudomonas*. Antibiotic Ampicillin was used as positive control while nutrient broth was used as negative control. Overall isolated LAB have good tendency to inhibit both gram negative and positive bacteria having different spectrum against different strains.

**PO 32:****Effect of commercially available banaspati ghee on lipid profile in mice**

Vishal Kiran and Dilara Abbas Bukhari

Department of Zoology, Government College University Lahore, Pakistan
vishalkiran184@gmail.com**ABSTRACT:**

The purpose of this study was to analyze the effect of high fat diet on mice blood through lipid profiling. Lipid irregularities majorly contribute to the higher risk of cardiovascular disease and other disorders in diabetics. The level of low HDL will raise abruptly as the prevalence of metabolic syndrome and diabetes mellitus continues to rise. A diversity of anti atherogenic results are regulated by high density lipoproteins (HDL). HDL hinders adhesion molecule expression, excites endothelial cell nitric oxide production, regulates antioxidant consequences through paraoxonase and methionine rests in apoprotein A-I, encourages prostacyclin formation, and stops clotting and apoptosis of endothelial cell while other processes are being happened. HDL is a highly metabolically active and heterogeneous class of lipoproteins. Lipid profiling is an important tool for assessment of different diseases. To diagnose cardiovascular diseases lipid profiling evaluation is an important tool. Therefore, the stability of samples is important when analysis of high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), non-HDL-C, and triglycerides (TG) and total cholesterol (TC) is carried on. The term stability can be defined as an ability to keep the concentrations of analytes negligibly affected, within a tolerable disparity, during a period of time. To proceed the testing techniques a protocol was set up in which 15 albino males and 15 albino females were kept in cages and were divided into 3 male and 3 female groups out of which two were control groups, one was female control and second was male control. Others were labelled as Nirala male group, Nirala female group, Nice male group and Nice female group. Control were given normal diet while others were given high fat diet for 45 days. Different techniques were used in lipid profiling process which include HDL test, Triglycerides test (TG) and cholesterol test (CT). Several disorders are associated with abnormal concentrations of cholesterol, triacylglycerides and HDL levels. Hypertension is majorly caused by high blood cholesterol amounts and hypercholesterolemia is caused by high blood pressure. Dyslipidemia roots for endothelial damage and consequent loss of physiological vasomotor action, which may be established as augmented blood pressure. CHD is usually caused by lipids and lipoproteins. There is a high relationship between high levels of serum LDL cholesterol, very low density lipoprotein, total cholesterol, triglycerides, low level of HDL cholesterol, and augmented body mass index (BMI). All of these are highly associated.

PO 33:**Association of *MMP9* polymorphism with the onset of type 2 Diabetes mellitus**Iqra Mubeen, Sidra Mumtaz and Naila Malkani
Department of Zoology, GC University, Lahore
iqramubeen367@gmail.com**ABSTRACT:**

Diabetes mellitus is a complex metabolic disorder associated with hyperglycemia either due to the reduced secretion of insulin hormone or insulin does not perform its function properly. Both genetic and environmental risk factors are involved in the onset of disease. The present project was designed to evaluate the genetic association of *MMP-9* gene with the onset of diabetes mellitus and its pattern of inheritance among families in Pakistani population. For this purpose blood samples were taken from 17 families including cases and controls. Three SNPs from *MMP-9* gene *rs 2274756 (TaqI)*, *rs 3918242 (SphI)* and *rs 17577 (StyI)* were selected for genotypic analysis. Genotype analysis of each individual was performed by PCR-RFLP techniques. Females were at higher risk for diabetes



mellitus as compared to males. Obesity and positive family history appeared to be important risk factors for the onset of disease. Genotyping of *MMP-9* SNPs showed that all selected SNPs *rs* 2274756 (*TaqI*), *rs* 3918242 (*SphI*) and *rs* 17577 (*StyI*) were significantly associated with the onset of diabetes mellitus. The genotype CT and TT for *rs* 3918242 (*C/T*) in patients and non-diabetic controls were found to be highly associated with diabetes mellitus. For *rs* 17577 *A/G*, both homozygous GG and heterozygous AG mutations were identified in association with diabetes mellitus. In case of *rs* 2274756 (*A/G*), heterozygous mutation AG was significantly associated with the onset of disease. The phenotypic and genotypic pedigree analysis showed the association of all the three SNPs in patients and their relatives indicating these *MMP-9* SNP's may cause the disease in next generations at any stage of their life. In conclusion, diabetes mellitus is causing serious health hazards effecting large number of Pakistani population and *MMP9* gene polymorphisms (*rs* 2274756 (*TaqI*), *rs* 3918242 (*SphI*) and *rs* 17577 (*StyI*)) play a significant role in the onset of diabetes mellitus. Hence, diabetes mellitus is effectively contributing to positive family history among Pakistani population.

PO 34:

Evaluation of cue-lure pheromone for the attraction of Melon fruit fly *Bactrocera cucurbitae* in Bitter gourd vegetable crop

Niaz Ali Jakhrani*, Naheed Baloch, Niaz Hussain Khuhro, Tooba Khan, Shamsher Ali and Abro Zain-ul-Aabdin

Advanced Entomology Laboratory, Department of Zoology, University of Sindh, Jamshoro, Pakistan.

jakhraniaz@gmail.com

ABSTRACT:

Fruit flies constitute the most important group of pest infesting fruits and cucurbitaceous vegetable crops throughout the universe. Particularly Melon fruit fly has been weighed notorious pest. For the management of this pest, various control measures have been advocated in all over the world. During the performed research work assess the Persistency and Durability of cue-lure sex pheromone and of three different insecticides including Limda, Amida, and Route. Keeping in view sex pheromone was used for the attraction as well trapping of flies under laboratory conditions and the insecticides mixed with cue-lure for the killing of pest inside the traps was observed as triplicate under field conditions. The four different persistency durations such as 15, 25, 35, 45 days were observed in bitter gourd crop. Results revealed that significant higher *B. cucurbitae* were captured in the fifteen days of replenished which ($41.89 \pm 1.83a$). However, significantly lower ($19.44 \pm 1.46e$) after sixty days of replenished. It was observed that lure might be replenished after every fortnight in the month of May, June and July-2016. Moreover, results also depicted that considerably higher (49.62 ± 1.95) killing of *B. cucurbitae* were observed in route and lower (38.30 ± 1.92) in Amida. The results of the study would be helpful for the selecting of the insecticide in mixing with cue-lure for the management of the cucurbit flies under field conditions.

PO 35:

Study of antimicrobial activity and antibiotic sensitivity of bacteria isolated from soil and water of river ravi

Sara Hayee and Iram Liaqat

Department of Zoology, GC University, Lahore

sarahayee_1@hotmail.com

ABSTRACT:

Microbes have been proved to be a natural source of chemical compounds which have shown great diversity. Many microbes yielded secondary metabolites which are very important bioactive compounds. These compounds have been used in pharmaceutical and drug industry. These



compounds have unique chemical nature and structures. Soil and water are major rich sources of microbes which require more exploration. Present study is an attempt to explore microbes from soil and water brought in by River Ravi Lahore, Punjab. Two samples each of soil and water have been collected from different sites of River Ravi. A total of about 50 isolates were checked for their antimicrobial activity against *Escherichia coli*, *Bacillus subtilis*, *Bacillus lechiformes*, *Pseudomonas aeruginosa* and *Klebsiella pneumonia* and *Salmonella* sp. Preliminary screening by cross streak method showed 19 potent strains. Agar well diffusion method was used to check the antimicrobial potential of bioactive compounds of obtained 19 isolates. Secondary screening confirmed 03 potential isolates.

PO 36:

Detection and quantification of heavy metals in rain water of district Poonch, Bagh and Sudhnuti

Majid Mehmood¹, Samaira Mumtaz¹, Ghazal Mehmood², Asia Ismail²
samairamumtaz@yahoo.com

ABSTRACT:

Most of the people in the Poonch division of Azad Jammu and Kashmir use spring water, tap water and well water for drinking and other purposes but the water sources are running short with increase of population. Rain may serve as alternate source of water for drinking as well as other domestic purposes in this region. The present study was carried out to test the rain water in different seasons and areas for some physical parameters and some metals. For this purpose, about 40 samples of rain water were collected from different sites of Bagh, Rawalakot, Hajira, and Pallandri in different seasons. Physical parameters like pH, electrical conductivity and total dissolved solids were measured for all the samples. The quantitative detection of normal metals including calcium, magnesium, sodium and potassium as well as heavy metals including cadmium, chromium, nickel, lead and copper was performed using atomic absorption spectrometer. The data was analyzed quantitatively by analysis of variance (ANOVA) and qualitatively by Pearson's Chi square test using SPSS. The mean concentrations of TDS, pH and EC were found to be 52.24 ppt, 6.46 and 56.79 $\mu\text{S}/\text{cm}$ respectively. There was no significant difference of TDS, pH and EC values found among different regions and different seasons. Average concentrations of sodium, potassium, calcium and magnesium, were found to be 1.44, 0.47, 2.13 and 0.4 mg/L respectively. There was a significant difference ($p=0.001$) among the concentration of these trace metals. Calcium and magnesium were significantly different among the regions while there was no difference of other metals among regions. Season wise, there was no difference of any metal concentration in rain water samples. Results showed that concentrations of all parameters were within the limit of safe drinking water recommended by the World Health Organization (WHO), except pH that was slightly acidic in nature due to some pollutants which are possibly present in air and make the rain slightly acidic.

PO 37:

Nanoparticles: Recent applications and future prospects

Khadija Akram, Soha Shahid and Uzma Hameed
Institute of Industrial Biotechnology, GC University Lahore, Pakistan
uzmahameed@gmail.com

ABSTRACT:

Nanoscience and Nanotechnology are the new emerging frontiers of this century. Nanomaterials are of diverse types and have extensive applications in various fields including food, textile, health, pharmaceuticals, environment, agriculture, electronics, energy, automotive, construction and synthetic chemistry. The present review focusses on the applications, current trends, developments and future prospects of nanoparticles in the field of food, agriculture, environment, energy and health. The use of nanoparticles in the food industry became prominent in the last decade due to their uses such as antioxidants, and antimicrobial agents, for the detection of food contaminants and



pathogens, food quality improvement, delivery of nutraceuticals, additives in drinks, shelf-life sensor, food packaging and many more. In the field of dentistry, their clinical applications include periodontal therapy, melanin removal, soft tissue incision (without anesthesia), cavity preparation, enamel and dentin cutting. In textile engineering, the use of nanomaterials has increased rapidly as they can economically extend the properties and values of textile processing and products. Nanomaterial facilitates textile to develop multi-functionally and produce fabrics with special functions including antibacterial, UV protection, easy-clean, wrinkle-resistant, water and stain repellent, anti-odor, anti-static and in fabric finishing. Furthermore more, in electronic industry these are being used as alternative for electronic transistors, memory devices, nanoelectromechanical systems, thermo-photovoltaics, photonics, in quantum computers and software. Recently, nanoparticles are being used in cosmetics, skin protection and toothpaste. In household ceramic coating for iron, odor-catalyst, cleaner for glass floors and window. Applications of nanotechnology in health and medicine is a relatively new field of science and technology. Nanoparticles are being used in drug delivery, protein and peptide delivery, cancer therapy, treatment of neurodegenerative disorders and tuberculosis, ophthalmology, surgery, visualization, antibiotic resistance and tissue engineering. All these and many other applications in other fields make nanoparticles bases of top-notch technologies.

PO 38:

Prediction of vaccine candidates against *Pseudomonas aeruginosa*: An integrated genomics and proteomics approach

Muhammad Ibrahim Rashid, Anam Naz, Amjad Ali, Saadia Andleeb
*Department of Industrial Biotechnology, Atta ur Rahman School of Applied Biosciences (ASAB),
National University of Sciences & Technology (NUST), Islamabad, Pakistan.
saadiamarwat@yahoo.com*

ABSTRACT:

Pseudomonas aeruginosa is among top critical nosocomial infectious agents due to its persistent infections and tendency for acquiring drug resistance mechanisms. To date, there is no vaccine available for this pathogen. We attempted to exploit the genomic and proteomic information of *P. aeruginosa* through reverse-vaccinology approaches to unveil the prospective vaccine candidates. *P. aeruginosa* strain PAO1 genome was subjected to sequential prioritization approach following genomic, proteomics and structural analyses. Among, the predicted vaccine candidates: surface components of antibiotic efflux pumps (Q9HY88, PA2837), chaperone-usher pathway components (CupC2, CupB3), penicillin binding protein of bacterial cell wall (PBP1a/mrcA), extracellular component of Type 3 secretory system (PscC) and three uncharacterized secretory proteins (PA0629, PA2822, PA0978) were identified as potential candidates qualifying all the set criteria. These proteins were then analyzed for potential immunogenic surface exposed epitopes. These predicted epitopes may provide a basis for development of a reliable subunit vaccine against *P. aeruginosa*.

**PO 39:****Effect of cinnamon loaded with chitosan nanoparticles on polycystic ovary syndrome induced mice**

Sahar Noor, Irfana Liaqat, Memoona Arshad, Saman Alam, Threem Zia, Mohsin Munawar
Department of Zoology, GC University Lahore
saharnoor655@gmail.com

ABSTRACT:

Polycystic ovary syndrome (PCOS) is a common endocrine disorder in young women and leads to metabolic problems associated with the onset of infertility. The objectives of this study was to study the histopathological changes in ovaries of PCOS induced mice after treating with plant extract, nanoparticles and chitosan nanoparticles. Methanolic plant extract was used to prepare nanoparticles. The chitosan nanoparticles were prepared by ionic gelation method using methanolic extract of *C. zeylanicum* (CZBE) bark. The synthesized *Cinnamon zeylanicum* chitosan nanoparticles (CZCNPs) were characterized by FTIR and XRD. Histopathology and vaginal smear observation was done for confirmation of polycystic ovary development. The present study shows the protective role of biomolecule coated chitosan nanoparticles that improve the ovulatory function in estradiol valerate (EV) induced PCOS female mice. The positive effect of the synthesized nanoparticles against PCOS induced mice were proved in histopathological analysis. The PCOS ovaries contain atretic follicles with irregular estrus cycles. It was also observed that the granulosa cell layer was also reduced in the cyst containing ovaries and destroyed oocytes when they were compared with the normal control group. Cinnamon loaded nanoparticles low dose (50mg/kg) show that the formation of oocyte was started and the high dose (100mg/kg) show the regaining of corpus luteum. The cinnamon loaded chitosan nanoparticles low dose (50mg/kg) show the formation of oocyte, formation of zona pellucida and zona granulosa. Cinnamon loaded chitosan nanoparticles high dose (100mg/kg) show the dissolution of cysts. This study concludes that cinnamon loaded chitosan nanoparticles treatment reverts the estrus cycle back to normal cycle in PCOS induced mice.

PO 40:**Leptin receptor gene polymorphism (Gln223Arg) as a risk factor for obesity**

Rahila Islam, Irfana Liaqat, Ayesha Masood, Threem Zia, Saman Alam
Department of Zoology, GC University, Lahore Pakistan
ayeshamasood889@gmail.com

ABSTRACT:

Obesity is a multifactorial disorder. This is excessive and abnormal fat accumulation in the body that may impair health. Obesity is spreading all around the world due to many factors including genetic, environmental and living life style. There are different symptoms of obesity including stroke, hypertension, diabetes mellitus and cardiovascular diseases. The aim of this study was to find out the association of *LEPR* (Gln223Arg) gene polymorphism with obesity. Data from 210 obese and non-obese persons was collected. Among these 48 obese and 48 non-obese were selected for blood sampling. After DNA extraction, PCR analysis was done. PCR products were subjected to direct sequencing analysis. The frequency of A allele in obese females was 65.78% as compared to 48.68% in non-obese (OR= 2.60, CI=0.98-6.97, p<0.01) frequency of and G allele was 34.21% in obese when compared with non-obese females 51.31%. The frequency of allele A was 60% and G was 40% in obese males while in non-obese males A allele frequency was 45% and G allele frequency was 55%. This concludes that the Gln223Arg polymorphism was significantly associated with the onset of obesity in Lahore population.

**PO 41:****Biotoxicity assessment of Cry4B crystal protein against different species of mosquitoes from local isolates of *Bacillus thuringiensis*.**

Sahrish Iftikhar and DilAra Abbas Bukhari
Department of Zoology, GC University, Lahore Pakistan
sahrishiftikhar@yahoo.com

ABSTRACT:

Insects are the most abundant group of species found on earth. They might harmfully influence agricultural yields, humans and animals as well. Vector borne diseases such as Dengue fever, Malaria, Chikungunya, Yellow fever and Filariasis are mainly spread by the insect vectors. Previously chemical substances were effective due to their long residual action but they were not target specific. Due to this reason human being always tried to find out the agent which is target specific, highly toxic against harmful group of insect species and environment friendly as well. *Bacillus thuringiensis* is the most important biological agent used as insecticide and pesticide. For this, a total of 20 soil samples were collected from various regions of Pakistan mainly from Lahore, Sialkot, Gujranwala, Kashmir and Kasur for isolation of *Bt*. Biochemical characterization yielded 60% of the *Bt* isolates. Molecular characterization was done with general and specific primers of full length and shorter fragment of gene as well. 41% of the isolates were found to be *Bt* positive and 33% of *cry4B* positive. Ribotyping of *Bt* isolates demonstrated maximum homology with *Bacillus thuringiensis* serovar *krustaki*, *Bacillus thuringiensis* serovar *tolowarhi* and locally isolated strains of *Bacillus thuringiensis*. All the *Bt* isolates indicated maximum growth at 37°C, pH 7 and inoculum size 15%. Of the bacterial culture. Toxicity of *Bt* spores and total cell protein was examined by bioassays conducted on 3rd instar larvae of different mosquito species. Mortality (%) and LC₅₀ values showed that local isolates of *Bt* were more toxic than the reference strain HD500 used in this study. Toxicity analysis showed that strain GCU-DAB-SI-10 was the most toxic strain of all isolates found which was from moist and sticky soil of Plot area Sabzazar.

PO 42:**A detailed account of Lahore's ambient air quality profile and public health exposure: Current policy challenges and way forward.**

M. Shabbir, H. Saif, E. Tahir, M. N. Anwar
Sustainable Development Study Centre, Government College University Lahore
muneebshabbir786@gmail.com

ABSTRACT:

Presently, air pollution is a global issue with diverse and considerable public health implications. A 2018 World Health Organization Fact Sheet stated that air pollution is a major environmental health risk, with approximately 4.2 million deaths linked to outdoor air pollution globally in 2016, and 91% of these deaths occurring in low- and middle-income countries. This trend is even more noticeable in metropolitans of these developing countries and in this regard the case of Lahore is no exception. Lahore, the capital of Punjab province, is second largest city of Pakistan which accommodates 11.1 million individuals as per 2017 census. Studies conducted in 2015 reported that the levels of PM_{2.5} in Lahore were 9 times higher than WHO recommended limits. The emissions from the brick kilns and fossil fuel combustion – by vehicles and industries - are considered as the main drivers behind air quality deterioration. The harmful gases – such as SO₂, CO, CO₂, NO_x and PM - originating from aforementioned activities when inhaled by the humans, cause severe damage to human health in general and inflict humans with cardiovascular, central nervous system, lung cancer, chronic bronchitis, asthma, and different respiratory diseases in particular- with cancer incidence and mortality rates reported highest in urban communities. Besides these, other health issues such as



irritation of eyes, nose and throat are also prevalent in Lahore especially during the smog episodes, with SO₂ contributing to acid deposition and visibility alleviation that leads to an increase in accident rates. Ambient air quality is needed to be monitored for the protection of human health, it will facilitate us with information for the formulation of air quality standards corresponding to specific pollutants. Furthermore, global scientific community and policymakers could use this data for curbing the harmful emissions.

PO 43:**Effects of air pollution on human health – A detailed Review**

M. Iftikhar and M. N. Anwar

Sustainable Development Study Centre, Government College University, Lahore
bmciftikhar22@gmail.com

ABSTRACT:

Air pollution is the problem of growing importance. According to the report of the World Health Organization (WHO), every year the air pollution alone became a reason of around seven million deaths worldwide. It is known as an invisible killer as 9 out of 10 people breathe air of high pollutant level (WHO). The hazardous pollutants emitted from anthropogenic and natural activities diluted in the atmosphere. Air pollution increases significantly during the impeded air dilution process. The elevated level of air pollutants in the atmosphere through the combustion of fossil fuels causes changes in the atmospheric composition. The concentrations of Particulate Matter (PM_{2.5} and PM₁₀), Carbon Dioxide (CO₂), Carbon Monoxide (CO), Sulphur Dioxide (SO₂), Oxides of nitrogen (NO_x), Ozone (O₃), Volatile Organic Compounds (VOCs) and heavy metals are in excess of permitted levels in the air. These pollutants shows the responses differently to the human systems and organs. Air pollution causes acute as well as chronic health effects on human health. The study emphasizes on the adverse effects of air pollution on human health. It is studied that the air pollution can cause short term as well as long term effects on human health. The most common are the reversible changes in respiratory symptoms, asthma, airway reactivity disturbance, inflammation, increased respiratory morbidity and mortality, acute respiratory infections, lung cancer, cardiopulmonary diseases, chronic obstructive pulmonary disease, hypertension and ischemic heart disease. Chronic obstructive pulmonary diseases causes around 43% of all deaths worldwide, lung cancer accounts for 29%, ischemic heart disease nearly 25%, stroke causes 24% and acute respiratory infection accounts for 17% deaths worldwide. In this way, the burden of human diseases related to the air pollution alone is rapidly augmenting in the world. There is an immediate need to overcome this emerging issue by employing various techniques to eliminate or reduce the anthropogenic emissions into the atmosphere.

PO 44:**Detailed review of Lahore's recurring winter smog episodes: root causes, public health exposure and solutions.**

E. Tahir, M.N. Anwar, M. Shabbir, H. Saif, A. Murtaza

Sustainable Development Study Center, Government College University, Lahore
rajput.eza@gmail.com

ABSTRACT:

Rapid industrialization, use of fossil fuels for energy and transportation has damaged the atmospheric layer. Pakistan stands on 176th position out of 180 countries for bad air quality in the Environmental Performance Index (EPI). In December, January and February, winter smog appears which affects health and environment. Smog is a product of air pollution which is a mixture of gases, particulate matter and water vapor. The main precursors of smog are NO_x, SO_x and VOCs. Air quality of Lahore is nine times worse than national guidelines and smog has become a fifth season. In 2017,



Lahore witnessed only two days of good air quality. The major causes of smog are vehicular emissions, brick-kiln, crop burning and industrial emissions. Higher systolic and diastolic blood pressure has been reported in school children in the smog season. Moreover, many health problems like asthma, eye infections, allergies, respiratory tract infections, and cardiac pathologies are frequently reported in the smog season. Environmental regulatory organizations lack sensitive equipment, standardized protocol, trained personal and funds. Further, only 1% of industries report their emissions. Pakistan needs a stringent policy which could address the issue of smog at multiple levels like upgradation of automobiles, industrial emission monitoring and use of renewable resources.

PO 45:

Comprehensive review on Water Pollution in Pakistan and its corollary on Public health: aftermaths of development and a way forward

H. Saif, M. Shabbir, E. Tahir and M. N. Anwar
Sustainable Development Study Center, Government College University, Lahore
hiraifaif12@gmail.com

ABSTRACT:

Nearly 2.3 billion people are suffering from waterborne diseases across the World (UNESCO, 2003). In developing world, more than 2.2 million deaths are caused due to consuming polluted water. As (Arsenic) is a major public health threat in countries such as China, India, Bangladesh, Nepal and Pakistan as well. Active water pollutants in Pakistan includes pathogens, toxic metals such as arsenic, iron, cadmium, nickel, pesticides and water soluble radioactive substances. Being a metropolitan city, Lahore is the most suited site for industries and waste water is thrown in the channels falling into River Ravi. Study conducted at Chung, Manga-Mandi and Kalalanwala showed As concentration in 4µg/L, 672µg/L and 2400µg/L respectively in drinking water (exceeding WHO limit-10µg/L). Soil buffering capacity reduces temporally due to continuous irrigation with heavy metal contaminated water. As a result metals percolate in ground water or are taken up by plants. Microbial contamination causes diarrhea, gastroenteritis, typhoid and dysentery related diseases. Anthropogenic activities has also increased Mn concentration in various regions of Pakistan which exceeds WHO limits (0.5 mg/L). In Pakistan main sources of water contamination are municipal sewage, industrial effluents and unreliable water disinfection practices. Lack of proper monitoring on regular basis is worsening the situation. Furthermore, Water disinfection practices are not up to the mark even in metropolitan cities. A feasible policy with its true health and spirit can mitigate the situation. While changing rusty pipes, monitoring industrial effluents and maintaining sufficient distance between drinking water and sewage supply lines are also some approaches to combat with current formidable situation.

PO 46:

History of Freshwater Ichthyology of Pakistan

Saman Abdullah and Ajaz Ahmad Sandhu
Govt Post Graduate Islamia College, Gujranwala.
sandhu786pk@yahoo.com

ABSTRACT:

The interest in fish and fishery in the South Asian Subcontinent, now included in Pakistan, has been very great from time immemorial, which is evident from the fish paintings on the earthen vases of third millennium B.C. An analysis through the literature on ichthyology of South Asia shows that though Bloch, Lacepede, Bloch and Schneider, Russell, Cuvier and Valenciennes have made seminal studies on freshwater fishes, However their main emphasis had been on the marine forms, none of them can be considered as an exclusive worker on freshwater fishes of South Asia. However the Great names in the history of ichthyology of South Asia are as follows: Dr. Francis Hamilton, Francis Day, Heckel, Hora and Mirza. Mirza started his work on freshwater fishes of Pakistan since 1961 to up till now written more than 200 papers on systematics and zoogeography of the freshwater



fishes of Pakistan. Present study shows that there are 195 freshwater fishes of Pakistan. Further studies are required to explore the freshwater fishes fauna of Pakistan and use of modern techniques to define the specific position of these species.

PO 47:

A detailed review of exposure and plight of Pakistan's community to Climate Change induced diseases and associated losses: human lives and economic

A. Qazi , M. Zahra , A. Asghar , M. Haris , M. Obaidullah
Sustainable Development Study Centre, Government College University Lahore
ayesha.qazi007@gmail.com

ABSTRACT:

Urbanization, agriculture, industrial work and Greenhouse effect are the leading causes of the climatic changes all over the world .About 0.8 % of greenhouse gases emitted from industrial areas of Pakistan. The impacts of climate change include biodiversity losses, rise in sea levels, shifts in weather patterns, changes in freshwater supply and an increase in extreme weather events such as floods and droughts as well as glacial melting and various health impacts. Pakistan is recognized as a country with low income along with poor human development indicators. It has been found that temperature (proxy for climate change) has a negative and significant relationship with GDP, as well as with productivity in the agricultural, manufacturing and services sectors. The severity of these negative effects is higher for the Agriculture sector as compared to manufacturing and services. Pakistan is ranked 40th in the list, suffering 566 casualties, losing US \$47.313 million equivalent to 0.0048 per cent of the GDP. Warming of 2-3°C is estimated to increase the number of people at risk of malaria by up to 5 percent globally, or more than 150 million people. Climate change could increase the burden of diarrhea by up to 10 percent by 2030 in susceptible regions, such as South-East Asia. Since 2010, Pakistan has been going through the scourge of dengue fever, which resulted in 16,580 confirmed cases, 257 deaths in Lahore and approximately 5,000 cases and 60 deaths reported from other parts of the country. In 2014, the World Health Organization (WHO) estimated that climate change would lead to about 250,000 additional deaths each year between 2030 and 2050, from factors such as malnutrition, heat stress and malaria .In order to mitigate problems regarding climatic changes, we need to minimize the industrial as well as agricultural pollutants to maximize the economy of country.

PO 48:

Green Chemistry - A Possible Solution to Air Pollution

Ayesha Asghar, Mahak Zahra, Ayesha Qazi, Muhammad Haris, Muhammad Ubaidullah
Sustainable Development Study Centre, Government College University, Lahore
ayeshamalik9929@gmail.com

ABSTRACT:

A physical chemical or biological alternation to the air in the atmosphere is termed as air pollution which is responsible for 2.6 million deaths worldwide (4.7 % of the global total) and about 33 % in south Asia in addition to its impacts on human health and well being. Burning of fossil fuel, agricultural activities e g ammonia by-product of agricultural activities exhaust from factories and indoor activities such as household waste are major causes which resulted in respiratory disorders and heart problems ,global warming, acid rain, depletion of ozone layer and eutrophication.135000 deaths per year are attributed to ambient air pollution making it a leading cause of sickness and death in Pakistan .Nearly 90 percent of air pollution related deaths occur in low and middle income countries with nearly 2 out of 3 occurring WHO's South East Asia and Western Pacific regions. Concept of green chemistry is based on set of principles that when used in design, development and implementation of chemical products and processes enables to protect and benefit economy, people and planet. It uses renewable, biodegradable materials which do not persist in the environment .It is a strategic pathway to build a sustainable future .the principals of green chemistry involve the development of green catalysts and use of non toxic reagents .In last few years for sustainable production in agriculture use of renewable biomass resources increase to generate bio based food products with low inputs ,zero waste ,substantial social values and minimizing environmental impact

**PO 49:****Air Pollution - A leading cause of Respiratory Diseases**

Mahak Zahra, Ayesha Qazi, Ayesha Asghar, Muhammad Haris, Muhammad Ubaidullah
Sustainable Development Study Centre, Government College University, 54000 Lahore
mahakzahraawan092@gmail.com

ABSTRACT:

It has been reported that pollution, mainly air pollution is one of the major cause of serious human health issues with respiratory diseases being the most important concern. An estimated 4.2 million premature deaths globally are linked to ambient air pollution emerging from the pollutants with the strongest evidence for public health concern, include particulate matter (PM), ozone (O₃), nitrogen dioxide (NO₂) and Sulphur dioxide (SO₂). The major sources of these pollutants are human generated and sometimes natural sources. These include exhaust from factories and mining operations .the pollutants mainly cause heart disease, stroke, chronic obstructive pulmonary disease, lung cancer, and acute respiratory infections in children. Worldwide ambient air pollution accounts for 29%, 17%, 24%, 25% and 43% of lung cancer ,lower respiratory infection , deaths from stroke, deaths from heart diseases and pulmonary diseases respectively. In SOUTH ASIA, Prevalence of asthma was highest in India (6.3%), while Nepal had the highest prevalence of dispend (11.3%) and chronic cough (15.3%) . In ASIA, the developed countries accounted for 39% of years of life lost due to air pollution (when the definition of Asia was expanded to include the Indian subcontinent, Asia accounted for 65% of the total burden). Pakistan is facing a double burden of disease, with endemicity of hepatitis B and C with 7.6% affected individuals; the 5th highest tuberculosis burden in the world, and focal geographical area of malaria endemicity. In order to address all these problems we need to improve our air quality standards and limitize our emissions and for this purpose we have to improve our policy making process.

PO 50:**Antibacterial effect of Venom and Hemolymph of Spiders**

Muhammad Amjad, Rabia Yaqoob, Muhammad Arshad
University of Education, Lahore
zenab_zahid@yahoo.com

ABSTRACT

Infectious and microbial diseases have always been detrimental to human health. Millions of the people die every year due to these diseases. The microorganisms responsible for these diseases are becoming more and more resistant to the drugs and antibiotics already available in the market. Therefore, researchers are trying to discover new antibiotics with greater effectiveness and better results against the diseases. Moreover, the chemical substances from natural sources are considered safer to the human health. In the present work the antibiotic activity of the venom and hemolymph of two species of spider (*Cyrtophora citricola* and *Oxyopes javanus*) was checked against four pathogenic bacterial strains (*Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*). The Tris-HCl and Ampicillin (1% solution) was used as negative and positive control respectively. Antibacterial activity was determined by using disc diffusion method. The venom and hemolymph of both the selected species did not show any effect on the growth of four bacterial pathogens. The Tris-HCl also showed negative results while only the Ampicillin showed zone of inhibition against all the four strain.

