Dear Members

I welcome you all to the 3rd vol. and 1st issue of Ravian Forensic Society’s Newsletter, 2015. This issue will give an insight on activities held throughout the year. It comprises of detailed summary of substantial events and some extra-curricular activities held after previous issue. The top stories which are the essence of this issue are; Three Day First Aid Training Course, Visit to Rehabilitation Center, Seminar on Drug Abuse and Annual Dinner, Abstracts from 3rd Inter-University Poster Competition 2014.

To prosper and to evolve is an inspirational quality of Ravian Forensic Society which is accomplished by induction of new and executive members to keep the impulse alive for future activities. Society is motivated to disseminate knowledge. Feedback, suggestions, comments and support of our members are a valuable asset will help us to improve our newsletter. We welcome all of you to contribute in our efforts to make this newsletter impeccable.

I would like to express my immense gratitude to The Honorable Vice Chancellor; Prof. Dr. Muhammad Khaleeq-ur-Rahman (Meritorious), Dean faculty of Science & Technology/Art& Social Sciences; Prof. Dr. Islam Ullah Khan and Chairperson; Department of Chemistry Prof. Dr. Ahmad Adnan for giving us the opportunity to issue the Newsletter. My heartfelt and utmost gratitude to the Advisor Ravian Forensic Society; Dr. Muhammad Akhyar Farrukh for his untiring efforts and guidance at every step in the making of this newsletter. I am extremely grateful for the contributions and creative suggestions given by the Co-Advisor Ravian Forensic Society; Dr. Sabahat Zahra Siddiqui. I am thankful to Ms. Shaista Ali; Lecturer and Members of RFS for their support towards the quality of the newsletter.

Hope you find this issue informative and will appreciate the significant activities which were conducted by the Society.

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Three Days Course of First Aid Training

By Mr. Imran

Dated: 12-14 /11/13

Ravian Forensic Society organized 2\textsuperscript{nd} First Aid Training course on 12\textsuperscript{th}-14\textsuperscript{th} November, 2013. 20 students participated in the training; the basic knowledge and training of First Aid is given to students regarding Shock, Burn Cases, Trauma, CPR, Bandages, Bleeding, Injuries, Fractures, Poisoning, Heat & Cold, Bites & Stings and Allergies. The Pakistan Red Crescent Society also certified the participants of the training.

Visit to Rehabilitation Center “PANNAH”

Dated: 21/03/14

The Ravian Forensic Society (RFS) had organized a visit to a Rehabilitation center “PANNAH” at Rewaz Garden, Lahore on March 21, 2014. Students were accompanied by the Co-Advisor RFS, Dr. Sabahat Zahra Siddiqui. Students interviewed the patients and gathered valuable information to treat addicts.
Seminar on Drug Abuse
By Syed Zulfiqar Hussain
Dated: 19/11/13

Ravian Forensic Society has organized a seminar on “Drug Abuse” on 19th November, 2013. Syed Zulfiqar Hussain (Consultant, Anti Narcotic Campaign Expert, Social Marketing) was the invited Speaker. He elaborated the increasing trend of Drug Addiction in previous 5 years which are mainly affecting Lahore. He also motivated the students to combat against Drug Abuse.
Annual Dinner

Dated: 22/05/14

The Annual Alumni Reunion of Department of Chemistry GC University Lahore was held at the University’s Bukhari Auditorium under the auspices of Ravian Forensic Society. The Vice Chancellor GCU Lahore; Prof. Dr. Muhammad Khaleeq-ur-Rahman (Meritorious) was the Chief Guest while Punjab Forensic Science Agency Director General; Dr. Mohammad Ashraf Tahir, Dean GCU Prof. Dr. Islam Ullah Khan and Advisor RFS; Dr. Muhammad Akhyar Farrukh and Co-Advisor Dr. Sabahat Zahra Siddiqui were also present on the occasion. While sharing few words on the occasion, Vice Chancellor said that “the Chemistry Department had been a hub of research activities since its inception in 1896”. He said that “modern research had grown complex and multidisciplinary and it was not possible for a single research institution or university or department to possess all the knowledge, equipment, and techniques required”. Therefore, he laid stress on universities to establish academic and research communication with each other and share resources, expertise and equipment. He also mentioned that “GCU had opened its all research facilities for all students and researchers of Pakistan”.

Later the Vice Chancellor gave away Certificate of appreciation to the Dr. Muhammad Akhyar Farrukh and other Faculty members for their untiring efforts towards the development of research.
Glimpses from Annual Dinner
3rd Inter-University Poster Competition

(24th November, 2013)
Abstracts of 3rd Inter-University Poster Competition

1. Synthesis, Structural analysis of Novel Coordination Polymer of Gd (III) with Pyridine based ligand

By Sumaira Saleem, Dr. Islam Ullah Khan

Abstract
Lanthanide complexes have recently received considerable attention in the field of therapeutic and diagnostic medicines. Among many of their applications, lanthanides complexes are used as magnetic resonance imaging (MRI) contrast agents in clinical radiology and luminescent lanthanides for bio analysis, imaging and sensing. The coordination chemistry of lanthanide complexes showing biological applications is of recent origin. For the synthesis of coordination polymers, multidentate ligands are suitable, that contain several donor sites which allow the extension of the structure of the polymer in one, two or three directions. Among them, polycarboxylate ligands have received special attention. Ligands under investigation (PDC, H$_4$DCTA), when reacted with lanthanides/transition metal salts in the absence of auxiliary ligands under hydrothermal conditions produce crystals of various morphologies. The Lanthanide (III) and transition metal complexes of nitrogen and oxygen donor ligands yielded solid crystalline complexes which were characterized by UV–Visible, FTIR, X-ray diffraction, and thermal analysis and screened for antimicrobial and antioxidant activity.

2. Extraction and Purification of extracellular lipase from germinating Flaxseed

By Attique ur Rehman

Abstract
Extra cellular lipase is a lipolytic enzyme which belongs to the class hydrolases and it catalyses the breakage of ester bonds in triglycerides and results in the formation of glycerol and free fatty acids. Hence, lipase is very important enzyme as well as the leather industries, paper and pulp industries, and pharmaceutical industries are concerned. Lipase was extracted and purified from germinating flaxseeds by (NH$_4$)$_2$SO$_4$ precipitation, dialysis and column chromatography. Flax seeds are common linseeds, belong to family Linaceae, having nutritional, medicinal and health applications. Acid-base titration method and spectrophotometer was used for lipase assay in this particular research project. Lipase activity increased from 6.75 µg/ml to 16.87 µg/ml by (NH$_4$)$_2$SO$_4$ precipitation with specific activity increased from 1.391 µl/mg to 15.34 µg/ml. Furthermore, the activity increased from 6.75 µg/ml to 26.82 U/ml with specific activity increased from 1.391 µl/mg to 45.075 µl/mg by column chromatography which was the final step.

PRIZE DISTRIBUTION

1st PRIZE WINNER
Fozia Irum

2nd PRIZE WINNER
Haffsah Iqbal

3rd PRIZE WINNER

By Ammar Maqsood Joyia

Abstract
Compounds having a -SO₂NH₂ moiety in their structure are known as sulfonamides. Sulfonamides derived from p-amino-benzenesulfonamide are commonly referred to as"sulfa drugs". In this study the sulfonamide N-(Morpholin-4-ylethyl) benzenesulfonamide (3), is prepared by reacting amine 4-(2-aminoethyl)morpholine with Benzenesulfonyl chloride in the presence of Na₂CO₃.

Then four derivatives, 5a, 5b, 5c and 5d are prepared by reacting parent compound (3) with four different chlorides, which were used against different bacterial strains. The compounds 3, 5b and 5c remained active against all the bacterial strains taken into account. The compounds 5a and 5d showed no activity against Bacillus subtilis. The most active compound was (3) among all the compounds with MIC values of 13.67±4.11, 13.81±3.20, 11.99±5.00, 11.73±3.51 and 10.97±1.11 µM. All the synthesized compounds were characterized by the ¹H-NMR, IR and EIMS spectral data.

4. Synthesis and characterization of Fe₂O₃/SnO₂ nanoparticles

By Nayab Gauhar

Abstract
Nano Technology is being widely spreading these days due to its various applications in a number of fields. Nanoparticles are being used in biological, fingerprinting, photovoltaic and waste water treatment. SnCl₄.5H₂O, FeCl₃.6H₂O and sodium dodecylsulfate were used for the synthesis of Fe₂O₃/SnO₂. They were characterized by Powder XRD, FTIR, SEM-EDX, and TGA-DSC. The synthesized products were subjected to degrade methylene blue (dye) solution in three conditions i.e. in dark, under UV light and in sunlight at 665λ at 25°C with four different stirring time i.e. without stirring, after 15 min, 30 min and 60 min stirring. The maximum degradation was observed in the presence of Fe₂O₃/SnO₂ nanoparticles with the concentration of 0.08 M sodium dodecysulphate.

5. Synthesis, Spectral Characterization and Biological Evaluation of Different Chlorinated Sulfonamides

By Imran Ahmad, Dr. Aziz-ur-Rehman

Abstract
Because of bacterial resistance and unacceptable side effects in some patients, the antibacterial sulfonamides no longer enjoy the clinical vogue they once had. Still, their cheapness, undeniable efficacy in susceptible infections and the hope of overcoming their deficiencies leads to a continuing interest despite thousands having been synthesized to date [1-2]. The current study was based on the synthesis of various chlorinated sulfonamides by using 4-chlorobenzenesulfonyl chloride (I) in an alkaline aqueous media with variety of amines (2a-I). Twelve novel chlorinated sulfonamide derivatives (3a-I) were synthesized. All the synthesized compounds were characterized through modern spectroscopic techniques. These synthesized compounds further were screened against different enzymes like Butyrylcholinesterase, Lipooxygenase and urease enzymes to evaluate their biological activities. It was found that almost all the compounds showed weak to moderate biological activities.

6. In vitro assessment of relief to oxidative stress by different fractions of Boerhavia procumbens
By Muhammad Athar Abbasi, Kaniz Rubab

Abstract
Methanolic extract of *Boerhavia procumbens* Bank ex Roxb. was partitioned with *n*-hexane, chloroform, ethyl acetate and *n*-butanol sequentially after dissolving in distilled water. Phytochemical screening showed presence of phenolics, flavonoides and cardiac glycosides in large amount in chloroform, ethyl acetate and *n*-butanol soluble fraction. The antioxidant activity of all these fractions and the remaining aqueous fraction was evaluated by four methods such as: 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging activity, ferric reducing antioxidant power (FRAP) assay, total antioxidant activity and ferric thiocyanate assay. Total phenolics were also determined. Some fractions showed noteworthy antioxidant activity. The results of the antioxidant activity revealed that the ethyl acetate soluble fraction showed the highest value of percent inhibition of DPPH (57.21 ± 52%), the highest total antioxidant activity (0.549 ± 0.08) and also the highest total phenolic contents (77.1 ± 0.6) as compared to the studied fractions. Phytochemical screening showed high percentage of phenolics, flavanoides and cardiac glycosides in this fraction.

7. Synthesis and antibacterial activity of *N*-Substituted derivatives of *N*-tetrahydrofurfuryl-4-chlorobenzene Sulphonamide

By Nasir Bashir

Abstract
Due to broad spectrum activity of sulfoxamides, a series of new *N*-substituted derivatives of *N*-tetrahydrofurfuryl-4-chlorobenzensulfonamide (3) have been synthesized and further evaluated for antibacterial activity against gram-positive bacteria. The molecule (3) was prepared in an aqueous medium by the reaction of tetrahydrofurlylamine (1) and 4-chlorobenzenesulfonyl chloride (2) under dynamic pH control. It was further stepped up to yield *N*-alkyl/arylalkyl-*N*-tetrahydrofurfuryl-4-chlorobenzesulphonamides, 5a-i, by its reaction with alkyl/arylalkyl halides, 4a-i, in a polar aprotic medium in the presence of lithium hydride. The proposed structures of the synthesized molecules were corroborated by IR, ¹H-NMR and EI-MS spectral data. The resulted MIC values these compounds showed their good activity against *S. aureus*, the gram-positive bacteria, but moderate against the remaining bacterial strains.

8. Mixed oxide Nanoparticles and bacteria

By Saba Ahmad and Muhammad Akh- yar Farrukh

Abstract
Nano-particles have their applications in different fields like optical, catalytic, environmental and water purification are also getting importance in the medicine field i.e. nano-medicine. Nano-medicines are becoming popular with the passage of time scientists and researchers found them more beneficial and effective than other drugs. Their activities against bacterial strains were studied by different methods like disc diffusion method, dispersion method, suspension method and well method.
In present study, iron oxide-tin oxide nanoparticles were synthesized with different concentration of templating agent i.e. sodium dodecyl sulfate, SDS by hydrothermal method and these nanoparticles were then loaded by copper metal using deposition-precipitation technique. The synthesized product samples were characterized by Fourier Transform-Infra Red spectroscopy, Thermo Gravimetric Analysis, Scanning Electron microscope-Energy Dispersive X-rays, Transmission Electron Microscopy and Powder X-rays diffraction. The average size of these nanoparticles was from 5 to 50 nm with no clear appearance. The anti-microbial activity of these nano-particles was determined against gram-positive bacteria gram-negative bacteria using agar well hole method.

9. Synthesis, characterization, Structural elucidation and antimicrobial activity of some new complexes of pyridine-2, 6-dicarboxylic acid and pyridine-2, 4, 6-tricarboxylic acid with some biologically safe transition metals.

By Samia Zaheer, Dr. Islam Ullah Khan

Abstract
The building of inorganic-organic hybrid coordination polymers is an area of concentrated research commotion in supramolecular and materials chemistry, due to their fascinating structures and their potential application as magnetic materials, luminescent sensors, gas/chemical storage and separation and catalysts. Multidentate ligands containing N-/O-donor atoms, considered a good candidates for construction of such valuable complexes. Herein, we report the synthesis, Single crystal XRD studies, FTIR and Elemental analysis of two coordination polymers by using Pyridine-2,6-dicarboxylic acid (pydc) and Pyridine-2,4,6-tricarboxylic acid as muldidentate ligands. A Copper complex with two water molecules exhibiting fascinating H-bonding, crystallizes in triclinic space group P2_1/c with a= 7.2080(4) Å, b= 19.0377(10) Å, c= 6.4261(3) Å, α = 90° , β = 107.104(2) °, g= 90 °. Copper is showing (III) oxidation state with 6-coordination mode by coordinating three O, one N atoms from pydc ligand, two O as coordinated water molecules and one coordinated oxygen serves as a bridge to build two dimensional polymer.

10. In vitro studies of the hemolytic activity of new N-substituted sulfonamides in human erythrocytes

By Muhammad Athar Abbasi , Usama Waqas

11. ZnO-SiO_2 nanocomposites for development of latent fingerprints on various surfaces

By Ayesha Arshad
Abstract
Fingermarks are one of the most useful forms of physical evidence in identification and generalized proof of identity. The ridge patterns are characteristic to each person and immutable as they are formed deep in the skin, universal, and leave marks on objects handled with bare hands. Latent fingerprint development may be achieved with a wide array of optical, physical, and chemical processes. Several fingerprint powders have been used to detect latent fingerprints on various surfaces. Here a simple and cheap synthesis of ZnO-SiO$_2$ nanocomposites was carried out using conventional heating method to develop latent fingerprints on various surfaces to achieve excellent results. The nanopowder was characterized by using FTIR, SEM-EDX, TEM and XRD techniques. It was used as a dusting agent for the development of latent fingerprints on various surfaces such as Cardboard, Glass, Laptop, Metallic Can, Calculator, Board Marker, glazed shiny Wrapper, simple and shiny Plastic. ZnO-SiO$_2$ nanocomposites were also used as small particle reagent (SPR) on wet non-porous surface such as glass. The developed Fingermarks were of excellent quality with very clear third level ridge detail. Comparison of ZnO-SiO$_2$ nano-powder with commercially available white powder showed that ZnO-SiO$_2$ nano-powder is better than commercial white powder for development of latent fingerprints.

12. Cross-talk between $O$-GlcNAc modification and Phosphorylation on IRS 1 and 2: A road towards impaired insulin signaling in Alzheimer and Diabetes

By Zainab Jahangir

Abstract
Alzheimer's disease (AD) and diabetes mellitus (DM) are both age related consequences occurred with loss of body efficiency to work properly and memorizing the daily tasks. Although lots of research efforts have been made to overcome these diseases, unfortunately all the drugs were failed to control and bounce back the person normal conditions. Recent research revealed a significant connection between metabolic impairment and these diseases involving insulin signaling and glucose regulation. Moreover due to impaired insulin signaling researchers thought AD as brain specific type-3 DM. Insulin receptors substrate proteins (IRSs) are involved insulin signaling and any impairment either genetic or post-translational modifications (PTMs) lead towards risk of AD and DM. Phosphorylation on tyrosine and serine/threonine residues are important PTMs that regulate IRSs functions and docking and un-docking of insulin with insulin receptors. Two types of IRSs i.e. 1 and 2 are abundant in humans and are directly associated with insulin signaling, and improper dysfunction of both IRS-1 and 2 is thought as major step in progress of AD and DM. Interestingly, $O$-GlcNAc modification (addition of glucose molecule to serine or threonine residue) has inhibitory as well as dogmatic effects on IRSs functions. This cross-talk between these two PTMs regulates protein functions and working to get maximum output. Although a number of phosphorylated residues are confirmed experimentally on IRSs, however due to analytical difficulties experimental confirmation of exact $O$-GlcNAc modified residues is very difficult and time taking. In this study by using in-silico techniques we not only predict phosphorylation and $O$-GlcNAc residues on human IRS-1 and 2, but also calculate the 3D structure of these proteins to validate our predicted results.

13. Predatory capacity of different copepods species against *Aedes Aegypti* larvae from Lahore

By Nabila Kousar
Abstract
In laboratory predatory capacity of different species of Mesocyclops (M. pehpiensis, M. aspericornis and M. ogunnus) was assessed on 1st instar Aedes aegypti. A single adult female and male of each species caused 83, 69 and 63% and 62, 60 and 50% mortality against 10 Ae. aegypti post 24 hours exposure respectively. When alternative food (dead leaves in water from a pond) was added to the containers, mortality rates declined from 19-23% in females and 10-20% in males for 10 Ae. Aegypti. During evaluation of effect of container size on the predatory capacity of Mesocyclops, there was significant decrease in predatory capacity/rate in large size container as compared to small sized when compared between 200 ml & 5 liter, 1 & 5 liters and 3 & 5 liters containers. Evaluation of best predatory ratio using various numbers (1-5) of individuals Mesocyclops species against 100 larvae showed that 1:20 ratio (Copepod: larvae) is the best ratio for control of Ae. Aegypti. During long term affectivity of females same species of Mesocyclops against 1st instars Ae. aegypti indicated that overall predatory capacity/rate of females increased post 24-72 hours exposure.

14. Structural systematics of the Anhydrous 1:1 proton transfer compound of 2,4-dinitrobenzene sulphonic acid with 3-chloroaniline
By Saba Humayun

Abstract
A facile, expedient and green method was formulated to synthesize a series of 3-chloroanilinium based ionic liquids, by combining an aromatic amine with different derivatives of benzene-sulfonic acid. As a result of 1:1 proton-transfer forming an ammonium cation and a sulfonate anion, a novel fused organic salt was generated. The synthesized salts were subjected to physical and spectroscopic analyses, followed by further characterization through single crystal X-ray diffraction studies. The targeted compound, CA-DNBS (3-chloroanilinium 2,4-dinitrobenzene sulfonate, C$_{12}$H$_{10}$N$_3$O$_7$SCl), crystallizes in the monoclinic system, space group P2$_1$/c with a = 7.3995(1), b = 27.8489(6), c = 9.8246(2) Å, $\beta$ = 131.349(1)$^\circ$, V = 1519.82(5) Å$^3$, Z = 4, F(000) = 768, R$_{int}$ = 0.033 and S = 1.03. The new compound can be explored as an ionic liquid for various applications generally in chemical synthesis, catalysis and electrochemistry, for example as ecofriendly media and catalysts in organic reactions, or as efficient precursors in the manufacture of sulfa drugs. The prepared salt also possesses great potential in pharmaceuticals and can be studied for its use as an anticancer agent and as besylates.

15. Synthesis and studies of Lanthanides and Transition metal complexes of 2,6-pyridinedimethanol
By Saira Liaquat, Dr. Peter John

Abstract
Coordination compounds of lanthanides and transition metal complexes play role in mineral animal and plant world. They are also important in analytical chemistry, medicine, metallurgy, industry and in biological function system. Coordination compounds are used in many qualitative and quantitative chemical analysis. Color reactions given by metal ions are also because of the formation of metal complexes. Cerium which is member of the lanthanide series shows cytotoxic effects. Gadolinium is important for the suppressing reticuloendothelial function in vivo. Cerium complexes are used for controlling soot emission in diesel and biodiesel motors. These complexes can also act as nanoparticles. These complexes show luminescence characters, electrochemical behavior, antibacterial activity.
They have applications in redox flow batteries. These complexes have applications in the field of photography and electroplating also. Some of the complexes also act as catalysts. This cerium complex is formed by the reflux technique. Cerium was reacted with a ligand named 2,6-pyridinedimethanol. The set ratio of ligand and metal was 1:4. The solution of metal was added in the solution of the ligand. The media selected for the reaction was aqueous media. This solution was kept stirring for three hours on hot plate. The solution was evaporated and then golden yellow crystals were obtained. X-ray analysis showed a fan like arrangement of the complex formed.

16. Development And Validation Of A RP-HPLC-PDA Method For Simultaneous Determination Of Fluoromethanol And Neomycin Sulphate In Pharmaceutical Dosage Form

By Muhammad Mubashir Khan Naz, Dr. Peter John

Abstract

A simple, precise, rapid and accurate RP-HPLC-PDA method has been developed for the simultaneous determination of Fluorometholone and Neomycin sulphate in combined eye drops dosage form. Formulation containing Fluorometholone with Neomycin sulphate are used as anti-inflammatory steroid and a broad spectrum bactericidal antibiotic. The chromatographic separation was achieved on Purospher® Star C18 column (250 X 4.6mm, 5μm) using methanol: water (70:30, v/v) with 0.1% TEA as diluent, flow rate was 1.0 mL min-1 and column was kept at ambient temperature. Neomycin sulphate was pre-derivatized with 2,4-dinitrofluorobenzene. Quantification and linearity was achieved at 254nm over the concentration range of 40-540 μg mL-1 for Fluorometholone and 1-13.5 μg mL-1 for Neomycin sulphate after derivatization. The limit of detection (LOD) and limit of quantitation (LOQ) values were found to be 22.93 and 69.48 μg mL-1 and 0.22 and 0.67 μg mL-1 for Fluorometholone and Neomycin sulphate, respectively. The method was validated for linearity, accuracy, precision, LOD, LOQ, selectivity and robustness. The proposed method was optimized and validated as per the ICH guidelines and it was successfully employed for the determination of Fluorometholone and Neomycin sulphate in pharmaceutical eye drop formulations.

17. Development And Validation Of Illicit Drug Assay With HPLC-PDA

By Haffsah Iqbal

Abstract

An accurate, simple and specific reverse phase HPLC analytical procedure is established and validated for simultaneous determination of caffeine, ephedrine HCl, yohimbine HCl, methyltestosterone and tocopherol acetate in pharmaceutical formulations. Good chromatographic separations between caffeine, ephedrine HCl, yohimbine HCl, methyltestosterone and tocopherol acetate and stress induced degradations products were accomplished within 20 minutes using C18 column using water with TEA pH adjusted with ortho phosphoric acid at 4.2 as mobile phase A r caffeine, (8 t ephedrine HCl, 1.6μg/ml for yohimbine HCl, 2.6μg/ml for methyltestosterone and 3.5μg/ml for tocopherol acetate. All the analytes including the degradation products were separated with acceptable peak tailing and resolution. The established method can successfully be used for the routine and simultaneous determination of caffeine, ephedrine HCl, Yohimbine HCl, methyltestosterone and tocopherol acetate in pharmaceutical formulations.

By Saima Najam, Dr. M. Athar Abbasi

Abstract
This research describes the synthesis of N-(1-naphthyl)-4-acetamidobenzenesulfonamide (3) by nucleophilic addition of 1-naphthylamine (1) with 4-acetamidobenzenesulfonyl chloride (2) in water in the presence of aqueous Na₂CO₃ solution. Further the compound 3 was treated with various alkyl/aralkyl halides (4a-l) to yield the compounds 5a-l in the presence of LiH/DMF. The structures of the synthesized compounds were confirmed by ¹H-NMR, IR and EIMS spectral data. The synthesized compounds were screened against lipoxygenase (LOX), alpha glucosidase enzymes and 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical; and were found to be valuable inhibitor of lipoxygenase enzyme.

19. Determination of enzyme inhibition, kinetics and SAR of some natural products

By Saira Riaz, Dr. Durreshahwar

Abstract
The leaves of Plumaria Obtusa, Nicotinia tabacum and peels of Citrus sinensis were dried and pulverized and extracted in methanol. The crude extracts were fractionated by solvent extraction, by using different organic solvents (ethyl acetate, n-hexane and n-butanol) at various conditions. Different soluble organic fractions were obtained. Phytochemical studies were performed by using different spraying and locating agents. Pure rutin that was extracted from Citrus Sinensis, was further derivatized by iodomethane to form a methyl- derivative of rutin. Salicylic acid which was extracted from leaves of Nicotinia tabacum was further derivatized by using different amines to form their respective amides. Plant extracts and their derivatives were then screened against Acetythiocholine esterase, (SA-2, SA-4,SA-7,SA-8,SN-5,SN-6,SN-7,SN-8,SN-9,SN-12 and SN-14 show significant enzyme inhibition activity, then performed their kinetics. The structure of active compounds were determined through spectroscopic studies (UV, IR).


By Nabila Saleem, Dr. Peter John

Abstract
The research work elaborated the synthesis of organometallic complexes by intermingling the 3d, 4f and 3d-4f metal ions with modest and mixed oxygen donor ligands. In biological chemistry use of mixed ligands has a key role in complexation because the mixed chelation occurs in biological fluids. In vivo millions of potential ligands are likely to compete for metal ions. These generate particular structures which has been executed in the biological applications and potentially wanted as magnetic materials, bimetallic catalyst, luminescence and florescent material. Complexes of heterocyclic bases have been considered in the past because of their implication in biological systems as influential inhibitor. Metals used in this research work were Ce(III), Gd(III), Zn (II), Co(II), Ag(I), Zr(II) and Cd(II) experience complexation with 1,1,1-tris(hydroxymethyl)ethane, pyridine-2,6-dimethanol, oxalic acid, nicotinic acid and 8-hydroxyquinolvering the metal ligand ratios. Structural characterization of crystals was reported by using FTIR analysis and Thermogravemetric analysis. The effort also included the biological activity of the synthesized organometallic complexes using Gram + and Gram - bacteria and by comparing with standard.

21. Synthesis And Pharmacological Evaluation Of N-Substituted Derivatives of 3,4-(Methylenedioxy)aniline

By Samia Khizar, Dr. Aziz-ur-Rehman
Abstract

Sulfonamides are biologically active broad spectrum antimicrobial agents. In the present research, a collection of N-alkyl/aralkyl substituted compounds have been synthesized and investigated for different bacterial strains. The reaction of p-toluene sulfonyl chloride (1) with 3,4-methylenedioxy)aniline (2) was carried out and a target compound N-(1,3-benzodioxol-5-yl)-4-methylbenzenesulfonamide (3) was obtained in good yield. Finally target compound (5a-I) was obtained by stirring (4a-I) with different electrophiles in the presence of N,N-dimethyl formamide (DMF) as solvent and sodium hydride(NaH) was taken as base.\n
The structures of the synthesized compounds were established by spectroscopic techniques like \(^1\)H- NMR, EIMS and \(^{13}\)C-NMR. These compounds were assayed for their antimicrobial activities via screening them against gram- positive and gram- negative bacteria and most of the compounds showed 50 % activity by using reference standard Ciprofloxacin.

22. Forensic study of Oleander: A microscopic and biochemical aspect

By Ahmad Sohaib

Abstract

*Nerium oleander* is an ornamental plant which is recognized as highly poisonous due to its toxic metabolites. It produces serious toxicologies that may cause death, if ingested. Present study reveals the cellular structure and patterns of leaf and stem of *Nerium oleander* using staining method and their relationship with the toxicity level using GC-MS. Further, to demonstrate chromatographic method for the detection of toxic metabolites of *N. oleander*. The plant specimens were collected from Botanical Garden of GC University, Lahore. The fresh leaves & stem were separated for anatomical study and also shade dried to make extracts for detection of toxic volatile compounds after steam distillation. Three crude extracts were extracted in duplicate by using three different solvents. GC-MS results the detection of many toxic metabolites. Methanol extract of leaves (ML) contains high percentage of Oleic Acid, n-Octadecanoic acid and 1,4-Dioxane-2,6-dione (22.77%, 22.42 and 14.35%, respectively). Methanol extract of stem (MS) of *Nerium oleander* showed 3-O-Methyl Hexose in high percentage (72.26%) and n-Tetradecatetracontane (10.23 %). Extracts of leaves extracted through n-Hexane (NHL) showed peaks of Trans-Squalene (18.75 %), Hexadecanoic Acid (18.69 %) and 2-CycloHexane-1-one (14.18 %) in spectrogram. Likewise, extract of stem obtained through n-Hexane (NHS) showed peaks of 1,7-Hexadecanoic Acid with high percentage (43.66 %) and 9-Octadecenal (25.56 %) in spectrogram. Leaves extract obtained through Ethyl Acetate (EAL) showed peaks in spectrogram in which Di isooctyl Phathalate (56.70 %) was in high percentage.

23. Study of enzyme inhibition, kinetics and structure-activity relationship to of some natural products

By Sidra Tariq

Abstract

The aim of present study was to evaluate the acetylcholine esterase inhibitory activity in different natural compounds. This activity was checked in the extracts of *Plumeria obtusa* (family: Apocynacae), caffeine, hesperidine, cinnamic acid and their derivatives. Phytochemical chemical studies of these extracts of Plumeria obtusa revealed the presence of terpenoids and absence of alkaloids. Some fractions of plants showed significant acetylcholine esterase inhibitory activity such as SB-4 and SB-5 showed approx. 91 %
of inhibition, SB-7 (81%) while SF was found to be non-inhibitory. Caffeine and some derivatives of cinnamic acid also showed significant results. S-3, S-5, S-6, S-7, S-9, S-11, S-12, S-13, S-14, S-15, S-16, S-17, and S-19 showed good results, while S-8 and S-10 found to exhibit the moderate activity. S-19 did not showed the enzyme inhibitory activity.

24. Studies in the extraction and isolation of medicinal plants and the structural activities relationship

By Nuzhat Shafique

Abstract
This study comprised of solvent extraction of the aerial parts of *Ephedra gerardiana*, *Syzygium aromaticum* and *Nicotinia Tabaccum* followed by isolation and derivitization of active components; ephedrine 1 from *E. gerardiana*, nicotinic acid 2 from tobacco leaves eugenol 3 from cloves. These compounds were further derivatized namely 1-chloro-N-methyl-1-phenylpropan-2-amine (1a), 1-methoxy-N-methyl-1-phenylpropan-2 amine hydrochloride (1b), (cyanosulfanyl)(1-hydroxy-1-phenylpropan-2-yl)ammonium (1c), 2-(methylamino)-1-phenylpropan-1-ol sulfane dioxide (1:1) (1d), pyridine-3-carbonyl chloride (2a), pyridine-3-carbohydrazide (2b), ethyl pyridine-3-carboxylate(2c), N-[(E)-phenylmethylidenepyridine-3-carbohydrazide (2d), pyridine-3-carbonyl thiocyanate (2e), 2-methoxy-4-(prop-2-en-1-yl)phenol (3), 2-methoxy-4-(prop-2-en-1-yl)phenyl benzoate (3a), 2-methoxy-4-(prop-2-en-1-yl)phenyl acetate (3b) and subjected to various biological activities such as Reactive Oxygen scavenging (ROS) and Enzyme inhibition assay. The compounds were characterized by spectroscopic studies. Bioactive assays showed that out of all these compounds ephedrine and its derivatives shows significant inhibitory potential and nicotinic acid also showed somewhat satisfactory results but eugenol didn’t count in the list of potent inhibitory potential against enzyme but does show significant results against ROS inhibition. The inhibition potential against ACHe by the *E. gerardiana* shows 56.25 %, *N. tabaccum* extract 49.5 % this shows that ephedra extract could be used to cure CNS disorders. The isolated compound 1, 2 and 3 showed significant results as compared to their synthesized derivatives. The ROS inhibitory potential of all the extracts and particularly eugenol extract shows 85% and its derivatives show significant and reproducible results. It can be further research in near future against the cure of various nervous chronic disorders.

25. Synthesis, characterization and pharmacological screening of O-substituted derivatives of Coumarin

By Shafaq Naeem

Abstract
In the present work, a facile and biologically benign series of O-substituted derivatives of coumarin were synthesized. The synthesis of 7-hydroxy-4-methyl-1-benzopyran-2-one (3) was carried out by gearing up resorcinol (1) and ethylacetoacetate (2) in acidic media. Carbamates (7, 8) were synthesized by reacting phenylchboroformate (4) with differently substituted aliphatic amines (5, 6) under dynamic pH control in aqueous media in the presence of Na₂CO₃ solution. Brominated (3a, 7a, 8a) and nitrated (3b, 8b, 12) products of *N*-7-hydroxy-4-methylcoumarin) (3) and Carbamates (7, 8) were synthesized. Electrophilic substitution products were synthesized by further treating compound 3 and 3a with different electrophilic carbamates. Structure interpretation of all the compounds were carried out by IR, ¹H-NMR, ¹³C-NMR & EI-MS spectral data.
The bioactivity of all the synthesized compounds was evaluated against four gram-negative (Klebsiella pneumoniae, Escherichia coli, Pseudomonas aeruginosa and Salmonella typhi) and two gram-positive bacteria (Bacillus subtilis, Staphylococcus aureus). The screening against different bacterial strains shown that the synthesized coumarin derivatives have splendid pharmacological potential.

26. Synthesis, Structure Elucidation and Pharmacological Screening of Various Sulfanilamide Derivatives

By Sagheer Ahmad, Dr. M. Athar Abbasi

Abstract

In the presented study, a series of sulfamoyl derivatives, 3a-1, of 1-amino-2-phenylethane (1) have been synthesized in good yields by its reaction with different aryl sulfonyl chlorides, 2a-1, in the presence of aqueous Na₂CO₃ solution under definite pH control. These synthesized derivatives were further characterized by IR, 1H-NMR and EIMS for structure elucidation. Finally the screening against acetyl cholinesterase (AChE), butyryl cholinesterase (BChE) and lipoxygenase (LOX) rendered these molecules as moderate to good inhibitors of cholinesterase enzymes, AChE and BChE, relative to eserine, the reference standard.

27. GC-MS Analysis of Bark of Acacia Arabica and its Biological Activity

By Arshad Bhatti

Abstract

Acacia Arabica is a medicinal plant found in all over the Pakistan. Its bark is frequently used for the treatment of diseases like cold, bronchitis, skin diseases, wound leprosy diarrhea, toothache, small pox, biliousness, leucoderma and seminal weakness. Active constituents were extracted in ethanol, methanol, water and hexane. In part (A) hexane extract was analyzed by GC-MS spectrometer. Oleic acid was present in highest concentration. It is safe as an antimicrobial agent for human. Other compounds detected were heptacosane, Tetra-tetracontane, 17-methyl pentadecanoic acid, methyl 1,2,3-propantriyl docosanic acid, estra-1,3,5-(10)-triene-17B-ol, 10-octadecanoic acid methyl ester, 9,10-octadecadienoic acid methyl ester, 7,10,13-eicosatrienoic methyl ester. All these compounds have antimicrobial properties. In part (B), Ethanol, methanol, water and hexane extracts were used for the antimicrobial study by using well diffusion method and broth macrodilution method. Microorganism used for antimicrobial study were Bacillus subtilis, staph. aureus, E.coli, salmonella typhi and Asp. niger. Hexane and ethanolic extracts showed highest activity against microorganisms tested. Aqueous extract showed poor results against all microorganisms while methanol extract showed intermediate results. Acacia Arabica can be act as natural, easily available source of antimicrobial agent. Further work with modern techniques is required to completely understand the hidden aspects of Acacia Arabica.

28. Extraction of Copper From Low Grade Copper Ore By Bioreduction

By Afia Zaheer

Abstract

Metal extraction from the ores has been practiced by human civilization since Iron and Bronze ages. Increase in the global human population has lead to the increase in demands for metals besides other natural resources. Therefore bioleaching technology is getting importance and has been under development for the recovery of metals from the ores and concentrates.
In present study, bioleaching of copper from low grade copper ore was carried out with adapted and unadapted strains of Aspergillus niger in one-step bioleaching and two-step bioleaching shake flask experiment. The results were found to be highly significant in each experiment. In one-step bioleaching experiment about 62.4 % copper was recovered with unadapted Aspergillus niger while 77 % copper was recovered with adapted Aspergillus niger. However in two-step bioleaching experiment about 86.4 % copper was recovered with unadapted Aspergillus niger while 93.5 % copper was recovered with adapted Aspergillus niger. These results indicated the significance of Aspergillus niger in metal dissolution during bioleaching and shows a promising future in the development of bioleaching technology.

29. Liquid chromatographic determination of dextromethorphan and chlorpheniramine through HPLC-PDA

By Najam Ud Din

Abstract
A new, quick and rapid liquid chromatographic method has been developed by using HPLC for the determination of dextromethorphan and chlorpheniramine maleate in cough and cold TYNO syrup. These compounds are separated in less than 08 min on C18 column with an isocratic mobile phase consisting of methanol-dihydrogen phosphate buffer (0.1M) solution made with ultrapure water at pH =3 (60/40, v/v). During the examination of the compounds, flow rate of 0.8 mL/min was maintained and detection occurs at a wavelength of 230nm. The concentration was tested over a range of 5-100µg mL-1 for chlorpheniramine maleate and 50 to 1000µg/mL for dextromethorphan. The projected liquid chromatographic method was effectively tested for the daily analysis of these compounds in different cough syrups available in market. The occurrence of supplement compounds like preservatives and excipients did not exhibit any remarkable interference on the analysis of these compounds.

30. Extraction of precious metals from Saindak copper-gold ore

By Noor Ul Ain

Abstract
Extensive deposits of copper-gold ore occur in Saindak areas of Baluchistan, Pakistan. The copper-gold ore of Saindak contains gold in refractory form, locked in sulfide matrix of chalcopyrite and pyrite. Its gold and silver grades are 0.5 ppm and 1.5 ppm respectively. An experimental investigation was carried out to extract gold from it at laboratory scale. Being a low grade gold ore, it was beneficiated first by froth flotation technique to enrich its gold content. The process variables such as particle size of ore of feed, pH of pulp, pulp density, type and quantity of reagents and conditioning time were optimized to obtain maximum grade and recovery of concentrate. At optimum conditions, a copper-gold concentrate containing 20 % Cu with 16 ppm Au content was produced. The concentrate obtained contains mainly pyrite and chalcopyrite as gold containing minerals. As sulfide minerals hinder the gold dissolution, therefore flotation concentrate was roasted at 700°C with definite temperature programming to break the sulphide matrix for the liberation of gold particles. Roasted concentrate was subjected to cyanidation process. The various parameters of cyanide leaching i.e. particle size, concentration of cyanide ions, retentation time and slurry density under aerated conditions were optimized. Leachant collected was processed by Merill Crove process and smelting at 1250°C in graphite-SiC crucible. Bullion weighing 1.8 gram, having 20 % gold and 60 % silver was recovered. Head sample of ore, concentrate prepared and roasted material were analyzed by wet
volumetric and gravimetric techniques as well as by different latest instrumental methods like Atomic Absorption Spectroscopy (AAS), Inductively Coupled Plasma (ICP) System, Scanning Electron Microscope (SEM), X-Ray Diffractometer (XRD) and X-Ray Fluorescence meter (XRF). 65 % gold was recovered from Saindak copper-gold ore.

31. Structural Systematics of the Anhydrous 1:1 proton transfer compound of triethyl amine with 2,4,6-triethylbenzene sulfonic acid.

By Ayesha Munir, Prof. Dr. Islam Ul- lah Khan

Abstract
A convenient procedure has been devised for the synthesis of ionic liquid resulting from 1:1 proton-transfer, using triethyl amine and 2,4,6-trimethylbenzenesulfonic acid. The synthesized organic salt has a number of applications ranging from its consumption as eco-friendly solvent and catalysts in organic syntheses and to be utilized as efficient precursor for the production of sulfa drugs. Structure of the compound Triethylamini um 2,4,6-trimethylbenzenesulfonate (TEA-TMBS) was determine by single crystal X-ray diffraction studies and infrared spectroscopy. The title compound (C_{15}H_{27}NO_{3}S) crystallized in the orthorhombic system.

32. Synthesis, Characterization and Applications of IronDoped Tin Oxide Titanium Oxide Nanoparticles

By Fozia Iram

Abstract
Synthesis of iron doped tin oxide titanium oxide nanoparticles was carried out by sol gel method. The techniques used for the characterization of nanoparticles, Fourier Transform Infrared Spectroscopy (FTIR), Thermal Gravimetric Analysis TGA), Powder X-Ray. X-Ray Diffraction (XRD), Transmission Electron Microscopy Analysis (TEM), and Scanning Electron Microscope / Energy Dispersive X-Ray Microanalysis (SEM/EDX), confirm successful synthesis of nanoparticles. The prepared nanoparticles were applied to degrade methylene blue. Results suggested that these nanocatalysts may be envisaged for the treatment of waste waters in textile industries.

33. Degradation of Explosive Materials by using MgO-SnO2 nanoparticles

By Hina Perveen

Abstract
Surfactant controlled synthesis of MgO-SnO2 nanoparticles were prepared with hydrothermal method, for this purpose different concentrations of sodium dodecyl sulfate (SDS) were used by keeping all other reaction conditions same. Moreover MgO-SnO2 nanoparticles were also synthesized by varying the concentration of precursors; hexa hydrated magnesium nitrate Mg(NO_3)_{2}.6H_2O and penta hydrated tin chloride (SnCl_4.5H_2O), while all other reaction parameters were same. The influence of these reaction parameters on the particle size and morphology of these nanoparticles were investigated by using Fourier transform infrared (FTIR) spectroscopy. X-ray diffraction (XRD), Scanning electron microscopy (SEM), and Energy dispersive x-ray (EDX Transmission electron microscopy (TEM) and Thermo gravi metric analysis (TGA) The catalytic activity of MgO-SnO2 nanoparticles was checked against explosive chemicals; 2,4-dinitrophenylhydrazine (DNPH) by preparing its solution in acetone. MgO-SnO2 nanoparticles found to act as a good catalyst to degrade the 2,4-dinitrophenylhydrazine. Catalytic activity of MgO-SnO2 nanoparticles was measured by using UV-spectrophotometer. MgO-SnO2 nanoparticles showed its efficiency against explosive compound (DNPH) up to 19.13 %.
34. Degradation of Explosive Material by using CaO-SnO₂ nanoparticles

By Badar Munir

Abstract
Surfactant controlled synthesis was done to prepare CaO-SnO₂ nanocatalyst by using hydrothermal method at different concentrations of sodium dodecyl sulfate (SDS) by keeping all other reaction parameters constant. Moreover another set was synthesized by varying the concentration of precursors; penta hydrated tin chloride (SnCl₄·5H₂O) and dihydrated calcium chloride CaCl₂·2H₂O, while all other reaction conditions were kept same. The effect of these reaction conditions on the distribution of particle size and shapes of these nanocatalysts were investigated by using different techniques; X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy (SEM), energy dispersive x-ray (EDX), thermo gravimetric analysis (TGA) and Fourier transform infrared (FTIR) spectroscopy. The application of CaO-SnO₂ nanocatalyst was observed for degrading the DNPH. Catalytic activity of these nanocatalysts was checked by using UV-spectrophotometer. These nanoparticles degrade the toxic chemicals up to 25.65%.

35. Study Of In-Vitro Effect of Nanaomaterial on Succinate-Fumerate System & Resultant Effecting Metabolic Pathway

By Samreen Tareen

Abstract
In this study oxidation of sodium succinate in aqueous solution was investigated using potassium ferricyanide as oxidizing agent. Kinetic measurements were carried out on kinetic mode at λₘₐₓ 420 nm. Effect of different nano metal oxides (MgO & CaO) was observed on oxidation of succinate at 25±0.05°C. These nano metal oxides were prepared by hydrothermal method and their characterization was done by using FTIR, TGA, SEM-EDX, TEM and XRD. Kinetic results indicate that these nanoparticles inhibit the conversion of succinate into fumerate and as their particle size decreases pseudo first order rate constant values increases. Reusability of CaO nanoparticles was also evaluated. In the end it was concluded that elevated concentrations of these nano metal oxides can severely affect the ATP cycle by inhibiting succinate oxidation which is important step of this cycle and it can lead to various metabolic disorders.

36. Laboratory Evaluation Mesocyclops And Bacillus Theruginiensis (WDG) As Biological Control Agent Of Dengue Vector

By Nusrat Jahan, Saira Yousaf

Abstract
The present study evaluated an integrated control of dengue vector Aedes Aegypti by using two biological control agents: a local species of Mesocyclops ogunnus and Bacillus thuringiensis isrealensis (WDG). The major objective was to design cost effective, eco-friendly and an efficient method to control dengue vectors in Pakistan. Mesocyclops were collected from various localities of Punjab and identified with proper key characters. Predatory capacity of M. ogunnus was evaluated in small (200 ml, 1 liter) and large (12 and 15 liters) size containers by increasing larval density from 25-300. The best predatory ratio 100 % was evaluated as 1:1-1:7 in 200 ml/1 liter and 1:1-1:2, 1:1-1:3 in 12 and 15 liters containers respectively, indicated that the predatory capacity was effected by the increasing size of container, as the interaction of predator with prey reduce in large size containers. When M. ogunnus integrated with Bti (0.1-0.01
72 hours post exposure. In long term integration two concentrations 0.1 and 0.01 ppm of Bti (WDG) caused 100-24 and 34-12 % larval mortality as compared to 100-88 % and 100-28 % when used with single M. ogunnus respectively for two weeks post exposure.

37. Biofilm characterization of bacteria isolated from oral samples, food industry and clinical samples (urine and wounds).

By Qurat ul Ain Pervaiz, Sidra Jamil, Amara Shauqat, Dr. Iram Liaquat

Abstract
Biofilms are universal occurring in large number of environment ranging from aquatic, food industries to medical devices thus posing great risk to human health. Microorganisms growing in a biofilm are highly resistant to antimicrobial agents and they cause several human diseases. Hence the objective of this study is to assess the biofilm forming capacity of bacteria. For this purpose, oral sample from 30 subjects, clinical samples from 30 subjects and 30 industrial samples were collected. 150 bacterial strains were isolated out of which 75 were purified on the basis of morphological variations on nutrient agar plates. 30 strains showing high antibiotic resistance profile were selected and characterized further on basis of biochemical tests. Biofilm characterization was done for 9 strains (F22, B4, SpG6, U3H, W21cb, U15A, Sh1(1), F2(2) and S7(2) following two methods i.e. Congo red and test tube. Results showed both gram positive and gram negative strains. Physiological characterization showed 37°C as optimum temperature for all strains, however all strains showed best growth pH 7 except S72 and B4 which showed best growth at pH 10 and 6 respectively. Biofilm formation by Congo red method resulted in black colonies for 6 strains which was further confirmed by test tube method having maximum biofilm formation after 168 hours.

38. Survey Of Different Adulterant In Milk

By M. Saleem, Dr. Ahmad Adnan

Abstract
Thirty Milk samples from different districts of Punjab were purchased and studied on behalf of physical and analytical tests to identify its purity by testing physical and chemical parameters. Sensory attributes (Smell, Taste, Odour), COB (clot on boiling), pH, LR (Lactometer Reading), B.R (Butyrometer Reading), SNF (solid not fat). Na ions, Sorbitol, Glucose, Sugar, Starch, Detergent, Urea, Salt as chloride, H₂O₂ (Hydrogen peroxide), Formalin and Fat test were performed for each Milk sample. Results of these tests show that all samples were free from adulterations. Whereas result of sample No.9 shows low L.R and SNF value which indicates that there must be addition in it of ice or water which decreases that value. B.R value of sample No.19 was also high which shows addition of vegetative fat or oil. Result of Sample No.2 shows low fat value which is the result of removal of fat from milk after heating.

39. Studies on Drug of Abuse

By Muhammad Tayyab

Abstract
Cannabis is most commonly used drug not only in Pakistan but also in the whole world. Its use is growing every year. GCMS allows analysis of cannabis sativae and there is a difference between the constituents of this plant. By knowing the plant constituents we can estimate from where this plant belongs to. In this way we can block production if we know the area in which it is produced. Comparison of constituents can easily be done by GCMS analysis and this analysis will help the investigator about the origin of plant. Comparison also helps about the knowledge of similarities of different samples of cannabinoids. It is supposed that cannabinoids are highly bounded to plasma proteins which has been proved here by HPLC analysis of pure extract and analysis of plasma
that cannabinoids are highly plasma bounded.

40. Synthesis, characterization and properties of some derivatives of polyhydroxyl compounds

By Sidra Hanif

Abstract
Synthesis of some derivatives of polyhydroxy compounds was carried out. The yield obtained was good enough. The structure of these synthesized compounds was determined by some spectroscopic technique: IR. Biological activities were also carried out for prepared compounds. These derivatives of 3-amino-2-((1R,2S,3R,4R)-1,2,3,4,5-pentahyroxypentyl thiazolidin-4-one (Ga, Gb, Gc, Gd, Ge, Gf, Gg) were tested by ROS (Radical Oxygen Scavenging) and DPPH assay of antioxidant activities. Among these Gb, Gc, Gd shows highest potency of antioxidant reagents.

41. Evaluation Of Antioxidant Potential Of Typha Domigenesis And Centella Asiatica Using Novel And Contemporary Methods

By Sidra Farid

Abstract
Two innovative, rapid and cost-effective approaches for evaluation of antioxidant potential are developed. N, N- Diphenyl Para Phenylene Diamine (DPPD) decolorization assay and Diamino Naphthalene Decolorization assay are developed for the screening of antioxidant activity. Both of these assays evaluate the free radical scavenging activity of analytes. A chromogenic reaction takes place between DPPD and DAN with potassium persulfate at selective pH produces two distinct radical cations with maximum absorption at 700 nm and 575 nm in its first-order derivative spectrum. A linear inhibition of color production was observed with linearly increasing amounts of antioxidants, with correlation coefficients (R2) ranging from 0.999 to 0.982. The antioxidant capacity of standard solutions of different hydrophilic and hydrophobic antioxidants was evaluated. Comparison of antioxidant capacity determined with these newly developed DPPD assay and DAN assay with the says are also applied for evaluation of antioxidant potential of Typha domigenesis and Centella asiatica and the results obtained are very much in accordance with other well-known 2,2'-azinobis-[3-ethylbenzthiazoline-6-sulfonic acid] (ABTS)-persulfate decolorization assay indicated the efficacy and sensitivity of the procedure. The proposed assays are less expensive (costs about US$5 per 100 assays) and require very short time for preparation of radical cation solution in comparison with ABTS assay. These novel as contemporary methods. DAN decolorization assay is applied to plasma samples to evaluate the antioxidant activity of plasma or the oxidative stress level of plasma. The results of phytochemical screening and Gas chromatographic analysis reveals that both Typha domigenesis and Centella asiatica are enriched with Flavonoids, alkaloids, polyphenols, Terpenoids and other important classes of phytochemicals.

42. Synthesis and Structural Studies of some Transition Metal Complexes/Supramolecular Assemblies of Pyridine Derivatives

By Alina Murtaza, Shahzad Sharif, Dr. Islam Ullah Khan

Abstract
According to Dr. Lehn, who invented the term, “a supramolecule is an organized, complex entity that is created from the association of two or more chemical species held together by intermolecular forces.” Great development has been observed in the crystal engineering of metal complexes in 1990s. In such molecular building units, metal ions / metal clusters act as nodes whereas, organic ligands act as bridges.