CONTENTS

INVITED TALKS

Quantitaive Analysis of Secondary Metabolites in Plants

Inder Pal Singh

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Plants have long been used as folkloric sources of medicinal agents. Plants have not only provided food and shelter but have also provided therapeutic agents for different ailments. Traditionally, plants have been used as medicinal extracts, infusions, decoctions and in various other forms in several traditional systems of medicine. One of the major problems with these traditional medicines is that the active ingredients are not well defined. It is important to generate chemical fingerprints as well as quantify as many compounds as possible in these extracts. The applications of advanced analytical techniques like HPLC-DAD, LC-MS, and NMR for quantitative analysis of secondary metabolites in selected medicinal plants will be presented.

Disposable Screen Printed Electrodes modified with Schiff base derivatives for Cation Sensing

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A series of Schiff base ionophores namely, SMS-0, SMS-1, SMS-2, SMS-3 and SMS-4 have been used for modification of working electrodes of screen printed electrodes (SPEs) as additives in the carbon ink. Changes in the voltammetric behavior of the ionophores upon interaction with metal ions show the sensitivity of SMS-0, SMS-1, SMS-2, SMS-3 and SMS-4 towards Al(III), Fe(II), Fe(III), Zn(II) and Ce(IV) ions, respectively. The modified electrochemical sensors were tested for selectivity towards commonly occurring metal ions as interfering ions. Performance of the sensing probes was compared with the SPEs co-deposited with AgNP and the ionophores. Limits of detection (LOD) were found for respective target metal ions. Computational studies are also reported for complexation behavior of the ionophores for cations. Further, all the analytical sensors were successfully used to detect the metal ions in the real-life samples environmental and food samples in aqueous medium.

Green Organic Transformations : A search for new catalytic Systems

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Our research work aims at development of new catalytic/photocatalytic systems for carrying out reactions under 'green' conditions. Our strategy involves designing of supramolecular assemblies as nanoreactors for the preparation of metal NPs. During the reduction process, supramolecular nanoassemblies are themselves oxidized to generate supramolecular polymeric species. We further utilize the as prepared polymeric assemblies in combination with metal/metal oxide NPs for carrying out various organic transformations in aqueous/mixed aqueous media. Recently, we have utilized same strategy for preparation of alloy metal NPs. We have developed hybrid Cu_2O-Fe_2O_3 NPs[1], $AgCu_2O$ NPs_2, Ag@Fe_3O_4 nanoclusters[3], Au-Fe_3O_4 nanodots[4,5] for carrying out C-C/C-N bond formation reactions.

Magnetic Organic-Inorganic Hybrid Anchored Pt Nanoparticles for CO_2 Hydrogenation Reaction

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CO_2 hydrogenation to hydrocarbons and feedstock chemicals are recognized as an encouraging method of converting low-cost C1 source to the progress of easy chemical production and energy storage [1, 2]. We began a new protocol to tie Pt nanoparticles on magnetic ionic liquid functionalized organosilica nanoparticles matrix. The recommended catalyst system was amalgamated by sol-gel condensation of silica precursors and bis-silylated ionic liquid monomer to catch hydrophobic magnetic nanoparticles. The Pt metal was supported on the structure of magnetic organo-silica hybrid nanoparticles followed by adsorbing platinum salt (Na_2PtCl_4) followed by ion exchange method. Further, sodium borohydride was used to reduce platinum salt to Pt NPs. The synthesized catalytic system was employed for CO_2 hydrogenation reaction under high-pressure reaction condition. An

external magnetic field was referred to informally retrieve catalyst and further reused for three runs. Task-specific ionic liquids were also employed as a reaction medium not only to seize the CO_2 gas but also to improve the reaction in a more judicious manner. Desired results were achieved, while using 1,3-di (N, N-dimethylaminoethyl)-2-methylimidazolium nonafluorobutanesulfonate ([DAMI][$CF_3CF_2CF_2CF_2SO_3$]) task-specific ionic liquid (figure 1). We received the formic acid in good TON/TOF value. We favorably reused the catalytic system up to 8 runs without losing the performance and durability of the catalytic system.

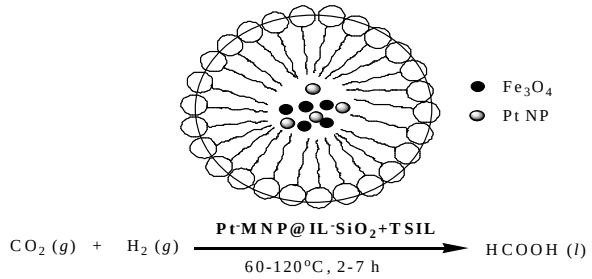

Figure 1. CO_2 hydrogenation reaction

References

1. P. R. Upadhyaya, V. Srivastava RSC Adv., 2016,6, 42297-42306.
2. V. Srivastava, Catal Lett, 2018, 148, 1879-1892.

Fragment Coupling Approach for the Synthesis of Macroheterocycles

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Keywords: macrocycles, Amino Acid Derivatives, Ring Closing Metathesis, Enyne metathesis

Macrocyclic molecules have renewed attention of biologist and chemists due to their ability to interfere with protein-protein interactions like biologics. Synthesis of these macrocycles has possessed challenges, and these could be synthesized by several methods. Metathesis and diversity-oriented synthesis together give a simple access to macroheterocyles with diverse functionalities.

In this lecture, fragment coupling approach for the synthesis of macrocyclicamino acid derivatives will be discussed. These fluorescentamino acids could be used to tag

biopeptides for tracking and analysis in biological systems. All the molecules were characterized by ^{1}H, ^{13}C, IR and Mass spectroscopic data.

References:

[1] Hansen, E. C.; Lee, D. J. Am. Chem. Soc. 2003, 125,9582-9583,
[2] Miller, S. J.; Kim, S.-H.; Chen, Z.-R.; Grubbs, R. H.J. Am. Chem. Soc. 1995, 117, 2108-2109
[3]. Kotha, S.; Singh, K., European Journal of Organic Chemistry 2007, (35), 5909-5916.
[4] Kotha, S.; Bansal, D.; Singh, K.; Banerjee, S., Journal of Organometallic Chemistry 2011, 696 (9), 1856-1860.
[5] Kotha, S.; Seema, V.; Singh, K.; Deodhar, K., Tetrahedron Letters 2010,51 (17), 2301-2304.

Pharmacophore based virtual screening and docking to identify novel lead compounds as potential Histone Deacetylase (HDAC) inhibitors

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Histone Deacetylases (HDACs) are chromatin modifying enzymes, which mediate removal of epsilon-acetyl groups of lysine residues present at the N-terminal part of core histone proteins. The reverse reaction is catalysed by Histone acetyl transferases (HATs). Aberrant expression of HDACs has been associated with many types of cancers and inhibition of this enzyme has been reported to be a novel strategy to treat these cancer types. To identify new and diverse lead compounds for use as potent HDAC inhibitors (HDACi), we developed a pharmacophore model from structurally diverse series of HDACis. A training set, consisting 22 compounds and an activity range of 0.082 nM - 26 ?M, was carefully selected. The most predictive pharmacophore model (hypothesis 1), consisting of five features, namely, one hydrogen bond acceptor (HBA), one hydrogen bond donor (HBD), one ring aromatic (RA), one hydrophobic aliphatic features (HY-AL) and one hydrophobic aromatic feature, had a correlation (r) of 0.965, a root-mean-square deviation (rmsd) of 1.07539, and the cost difference between null cost and fixed cost was 103.448 bits. The model was validated on a test set consisting of 16 structurally diverse compounds and performed well in classifying active and inactive molecules correctly. The hypothesis was used as 3D query tool in the virtual screening of ZINC database; ADMET filtered to retrieve new chemical entities (NCEs). 40 compounds among the Best Fit Hits with fit value more than 8 were

selected for docking into active sites of HDAC enzymes to study selectivity and specificity of hit compounds. Same approach was used to design inhibitors against HDAC-6 to get insights into subtype selective inhibitor design. The two phramacophores and virtual screening hits were compared and novel lead compounds have been identified, which could be used to design potent subtype specific HDAC inhibitors as anti-cancer therapeutics. We also performed CoMFA-CoMSIA analysis on a set of HDAC-6 selective inhibitors to suggest detailed requirement to achieve subtype selectivity.

Green approach to Chemistry and Environment: Synthesis of Ionic Liquids and their use

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The use of organic solvents currently being used in the laboratories needs to be replaced by greener solvents. There are many traditional methodologies and procedures for the experiments in which toxic organic solvents can be replaced by the less toxic solvents. The ionic liquids are considered as one of the greener solvents which are widely used now a days to avoid the toxological effects of the organic solvents. The ionic liquids can be synthesized in the laboratory and can be used for different applications In the present study, the influence of synthesized imidazolium based ionic liquids on the micellization behavior of cationic and anionic surfactants in the aqueous medium have been analyzed. Along with this the effect of synthesized surface active ionic liquids has been examined. The different experimental set up like electrical conductivity, and spectroscopic techniques like fluorescence and UV-vis spectroscopy are taken into account to determine the various properties like CMC, degree of ionization and thermodynamic parameters of micellization. The results obtained from shows that aggregation of surfactants and ionic liquids has been extensively influenced by the addition of ionic liquids. Further the mankind have to think about the greener environment for present and future generations which have been discussed with the help of pictorial presentations.

New Fluoroquninolones And Their Antibacterial Activity Against Resistant Staphylococcus Aureus

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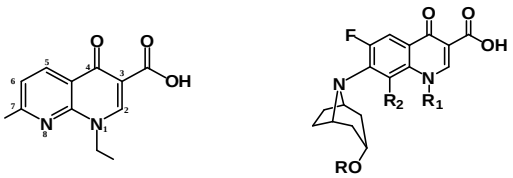
Fluoroquinolones are effective broad-spectrum antibacterial molecules that have economical route of synthesis and easy bioavailability. Ever since the discovery of nalidixic acid, this class of molecules are in use against severe infections. However the development of resistance against drugs by certain pathogens is both a natural and human expedited phenomenon[1] that is turning out hard to be treated. Methicillin-resistant S. aureus (MRSA) that is responsible for most of the nosocomial bacteraemias and serious illnesses like endocarditis, require more options. Currently, the only option for most of such resistant pathogens is vancomycin but with high treatment cost.

Fluoroquinolone class of molecules have also been reported to be resistant against certain pathogens including Staphylococcus aureus. We envisaged extending their term by addition of new structural characteristics to its quinolone skeleton. Although a large number of substituents' at C-7 position of the fluoroquinolone skelton have been described, nitrogen containing bridged molecules are not as much reoprted[2]. We have synthesized endo -nortropine substituted at C-7 position of the fluoroquninolone skelton and its derivatives to evaluate their antibacterial activity against resistant Staphylococcus aureus and other re-emerging strains.



Nalidixic acid - The 1st Fluoroquinolone

New Fluoroquinolones Compounds with *Endo*-nortropine Substituents

Initial MIC values and toxicity results have indicated materialization of new fluoroquinolone molecules with a potential to be developed further. The presentation will concentrate on the synthesis and evaluation of these compounds.

References:

1. S. Redgrave, S.B. Sutton, M. A. Webber, L. J.V. Piddock, Trends in Microbiol, 2014, 22, 438-445.
2. J. S. Kiely, M.P. Hutt, T.P. Culbertson, R. A Bucsh, D.F. Worth, L.E. Lesheski, R.D. Gogliotti, J.C. Sesnie, M. Solomon, T.F. Mich, J Med Chem,1991, 34, 656-663.

Recent Trends in sustainable development : Synthesis & Analysis

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The theme of this work is concerned with the use of concepts of Chemistry with special emphasis on green and sustainable development. We have developed wide range of chemosensors, which are equipped to detect heavy metal ions, poisonous anions and toxic chemicals. We have also made significant contribution for the development of detection methods for pathogen monitoring. Moreover, we have developed the methods for organic synthesis by avoiding the use of organic solvent and making use of environmentally viable conditions. This includes water-mediated synthesis, using solid-state ball milling and ionic liquids as green catalysts.

ABSTRACTS

Design, Synthesis And Biological Evaluation Of Spiro-Isoquinoline Pyrimidine Derivatives As Anticancer Agents Against MCF-7 Cancer Cell Lines

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We report herein a multicomponent strategy for the synthesis of spiro isoquinlino-pyrimidine conjugates and their evaluation as anticancer agents. These compounds are obtained through reaction of various 1,3-dicarbonyls, isoquinoline and dialkyl acetylene dicarboxylates. The cytotoxic activities of the synthesized compounds were evaluated against MCF-7 human breast cancer cells. Some of the compounds showed significant cytotoxicity on MCF-7 cell lines. Three compounds dimethyl 1'-methyl-2',4',6'-trioxo-2-(p-tolyl)-2,2',3',4',6',11b-hexahydro-1'H-spiro[pyrido[2,1-a]isoquinoline-1,5'-pyrimidine]-3,4-dicarbo-xylate, diethyl 1'-methyl-2',4',6'-trioxo-2-(p-tolyl)-2,2',3',4',6',11b-hexahydro-1'H-spiro-[pyrido[2,1-a]-iso-quinoline-1,5'-pyrimidine]-3,4-dicarboxylate and dimethyl 2-(benzo[d]-[1,3]dioxol-5-yl)-1'-methyl-2',4',6'-trioxo-2,2',3',4',6',11b-hexahydro-1'H-spiro-[pyrido[2,1-a]-isoquinoline-1,5'-pyrimidine]-3,4-dicarboxylate having substituent methyl and dioxyl ring in molecule have shown potent anticancer activity. The most potent cytotoxic compound against breast cancer cells in our study was diethyl 1'-methyl-2',4',6'-trioxo-2-(p-tolyl)-2,2',3',4',6',11b-hexahydro-1'H-spiro[pyrido[2,1-a]isoquinoline.

Crop Residues Management- A Necessity

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India is one of the key producers of food grains, oilseed crops and other agricultural products. These leftover residues cause not only resource losses but also a missed opportunity to enhance a farmer's income. Approximately, 500-550 Million Tonnes (MT) of crop residue is generated on-farm and off-farm annually from its production of 110 MT of wheat, 122 MT of rice, 71MT of maize, 26 MT of millets, 141 MT of sugarcane, 8 MT of fibre crops

(Jute, mesta, cotton) and 28 MT of pulses. If collected, these residues then may be use in different forms like industrial/domestic fuel, fodder, packaging, bedding, wall construction and green manuring etc. Burning of crop residues emits many of the harmful gases like (SO^2, NO^2 and CO, CO^2, CH4, N_2O etc.) (Tripathi S. 2015) [1]. Thus, educating the farmers about the benefits of not burning the agricultural residues could include alternatives like collection and transportation of agricultural residues, gasification as a fuel for the boilers, composting insitu, and straw mulching while using disc ploughs, disc harrows, rotavators, zero tillage and happy seeders. The Government's initiative to generate energy out of these by-products has acted as a catalyst. Apart from this, to disseminate the knowledge of usefulness of crop residues, extension education is encouraged among growers and producers (Devi S. 2017) [2]. Moreover, a documentary on the environment and climate change with special emphasis on how burning crop residue adversely impacts on climate change can be used (Badarinath K.V.S. 2006) [3].

References:

[1] Tripathi, S., Singh, R.N. and Sharma, S.K. 2015. Quantification and characterization of soil physico-chemical properties influence by wheat (Triticum aestivum L.) residue burning in Indian Journal of Global Ecology and Environment. 2 (3): 155-160.

[2] Badarinath, K.V.S. and Chand Kiran, T.R. 2006. Agriculture crop residue burning in the Indo-Gangetic Plains-A study using IRSP6 WiFS satellite data. Current Science. 91 (8): 1085-1089.

[3] Devi, S., Gupta, C., Lal jat, S. and Parmar, M.S. 2017. Crop residue recycling for economic and environmental sustainability - The case ofIndia Open Agriculture. (2): 486-494.

Effect of post harvest application of various chemicals on quality and shelf life of peach cv. Flordaprince

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The present investigation entitled Effect of post harvest application of various chemicals on quality and shelf life of peach cv. Flordaprince was carried out in the laboratory of Department of Horticulture, Khalsa College, Amritsar during the year 2017-18. The fruits were procured from the college peach orchard which were harvested at the commercial

ripening stage and were treated with $CaCl_2$(2, 4 and 6 per cent), putrescine and salicylic acid (1, 2 and 3 mmol) as well as distilled water (control) for 5 minutes. The dried fruits were packed in corrugated fibre boxes and stored at 3.3oC and 95% relative humidity for 28 days. The changes in weight loss, spoilage percentage, fruit firmness, total soluble solids, titratable acidity, sugars and carotenoids were estimated after 0,7,14,21 and 28 days during storage. Present experiment was laid out in Factorial Randomized Block Design (RBD factorial) The results of the study revealed that the physiological weight loss, spoilage percent, total soluble solids were increased significantly while the fruit firmness, titratable acidity and carotenoids decreased significantly during storage. The salicylic acid treatments reduced significantly the physiological weight loss and retained their firmness. In this condition, the highest and lowest of TSS: acid and sugars were observed in treatment of putrescine 3mmol and control respectively. The data revealed that the quality and shelf life was improved by the use of salicylic acid and putrescine treatment due to its effect on delaying the ripening processes.
Key words: Carotenoids, Ripening, Cold storage, Corrugated fibre boxes, Spoilage, Putrescine, Salicylic acid .

The call for Evergreen revolution

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In a sample survey, more than 40 per cent of our Indian farmers said that they wanted to quit farming. If this is true with older farmers, the younger farmers won't stay in the farms at all. Even agriculture graduates do not go back to farming; they like to take up jobs in banks or elsewhere. So, how do we attract and retain the youth in farming? Only if farming can become intellectually satisfying and economically rewarding. This means we have to bring down the cost of cultivation and improve productivity. Green revolution started in the mid 1960s and led to an unprecedented increase in the food grain production especially in the states of Punjab, Haryana and Uttar Pradesh, in the early phases. But, green revolution faced criticism on several grounds including economic grounds, expensive pesticides, fertilizers and irrigation systems, environmental damage and increased regional differences. Renowned agriculture scientist "MS Swaminathan" known as the 'father of Indian green revolution', said that organic agriculture could help us move from green revolution to evergreen revolution. Organic agriculture sustains the health of soils, ecosystems and people. The need for the sustainable development sets goal towards providing food security and nutrition. It relies on

ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Evergreen revolution focuses on producing more from less: less land, less pesticide, less water and to get sustainable agriculture. Despite large number of nutrition safety programmes provided by Central and state governments, India still remains the home for a large number of malnourished children and adults. The need of the hour is to move from green revolution towards 'evergreen revolution' by main focusing on the principles of ecology to ensure food security besides safe and healthy environment.

4H-1-benzopyrans for the spectrophotometric determination of Tungsten (VI) - A Review

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Tungsten (W) atomic number 74, belongs to third transition series of the periodic table. The element is remarkable for its highest melting point, lowest vapour pressure and highest tensile strength. The density of tungsten is 19.3 times higher than that of water and much higher than that of lead. Tungsten exists in a number of oxidation states where the most common is +6 and the other oxidation states range from -2 to +6. Tungsten is tremendously used in various fields including incandescent light bulb filaments, X-ray tubes, as industrial catalysts and as an alloying element. Due to its enrichment in by-products of many industrial processes and the complexity and various uses of tungsten alloys with other elements in a wide range of composition and in numerous fields of modern industry, demand is there of simple, selective, sensitive and rapid methods of detection and determination of the element. Out of a large number of reagents studied for the said purpose of determination, 4H-1-benzopyrans and their derivatives constitute a versatile class of analytical reagents for tungsten. In the following review article, 4H-1-benzopyrans and their derivatives complexing with tungsten are brought together to have the comprehensive data of their spectrophotometric behaviour.

Kinetic aspect of mechanism of oxygen reduction Reaction in PEDOT: a computational study

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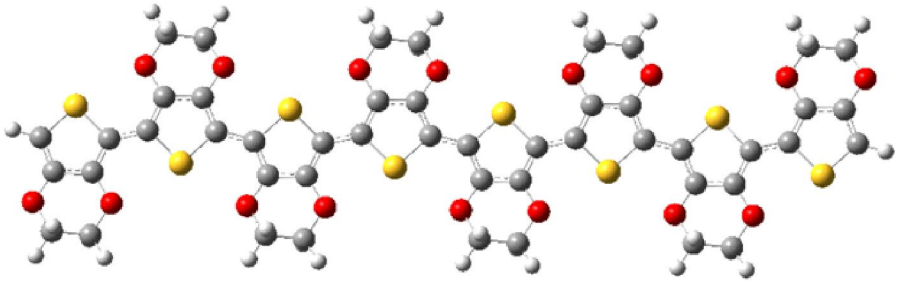
A Oxygen reduction reaction is the rate limiting factor in the operation of fuel cells resulting in the combination of protons with oxygen and electrons to produce water. This computational investigation explores the mechanistic pathway of oxygen reduction reaction in Poly(3,4- ethylenedioxythiophene) [PEDOT] at the DFT level of theory by locating different transition states. Free energy profiles have been calculated to find the energetically favourable pathway out of two possible pathways i.e. four electron-four step process involving reduction of oxygen with protons to produce water (Reaction Path 1) or two electron-two step process resulting in the formation of H_2O_2 as an intermediate (Reaction Path II). The free energy profiles along the reaction route provide enough evidence to conclude that two-electron two step is energetically favourable.



Polarons, bipolarons, and absorption spectroscopy of PEDOT revisited and revised

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B Electronic structure and optical absorption spectra of poly(3,4-ethylenedioxythiophene) (PEDOT) were studied using density functional theory (DFT) and time-dependent (TD) DFT. It is shown that the DFT-based predictions for the polaronic and

bipolaronic structure and the nature of corresponding optical transitions are qualitatively different from the widely used traditional picture based on semi-empirical pre-DFT approaches which are still dominant in current literature. The evolution of the band structure and the optical transitions are discussed as the oxidation level is varied. A particular attention is paid to the case of a high oxidation level, where the main features of the band structure are shown to be rather similar for the cases of bipolaronic and polaronic states, both of whom forming a band of empty states in the gap between the conduction and the valence bands and showing similar optical transitions. Based on the results of our calculations the experimental Vis/NIR absorbance spectroscopy is reexamined and a new interpretation of the measured spectra which is qualitatively different from the traditional interpretation is provided. Two common misconceptions in the field, including (i) half-filled polaronic band, and (ii) treating positive polarons as spin ½ quasiparticles are discussed and corrected. The findings and conclusions presented in the paper are generic for a wide class of conducting polymers (such as polythiophenes and their derivatives) that have similar structure of monomer units.

Solid Waste Management in Indian cities

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Solid waste management (MSWM) is one of the major environmental problems of Indian cities. Improper management of municipal solid waste (MSW) causes hazards to inhabitants. Various studies reveal that about 90% of MSW is disposed of unscientifically in open dumps and landfills, creating problems to public health and the environment. In the present study, an attempt has been made to provide a comprehensive review of the characteristics, generation, collection and transportation, disposal and treatment technologies of MSW practiced in India. The study pertaining to MSWM for Indian cities has been carried out to evaluate the current status and identify the major problems. Various adopted treatment technologies for MSW are critically reviewed, along with their advantages and limitations. The study is concluded with a few fruitful suggestions, which may be beneficial to encourage the competent authorities/researchers to work towards further improvement of the present system.

Synthesis, Characterization and Antimicrobial Activities of Hg(II) Ternary Complexes of 2-Substituted Benzothiazoles Derivatives

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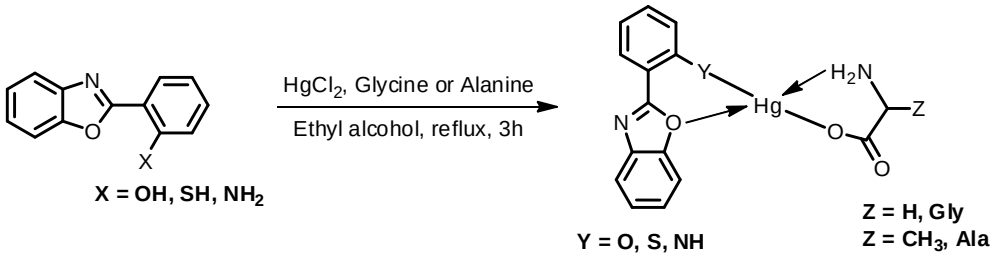
Biological important ternary complexes of type [HgL(A-A)] [where L = 2-(2'-hydroxynaphthyl)benzothiazole (APBT), 2-(2'-hydroxyphenyl)benzothiazole (HPBT), 2-(2'-mercapto-phenyl)benzothiazole (MPBT)] (A = glycine or alanine) have been synthesized and characterized by m.w. determination, magnetic measurements, infrared and NMR studies. A tetrahedral geometry has been proposed for the present mercury(II) complexes. All the complexes are coloured, thermally stable, monomeric and non-electrolytic in nature. The ligands and their metal complexes showed biological activity against pathogenic fungi Aspergillus niger and Fusarium oxysporum. The antifungal activity data revealed that mercury(II) complexes are found more fungi-toxic than the parent ligands.



Scheme 1: Preparation of Hg(II) ternary complexes.

Synthesis of Chiral Ionic Liquid of CBS's catalyst for Asymmetric reduction of ketones

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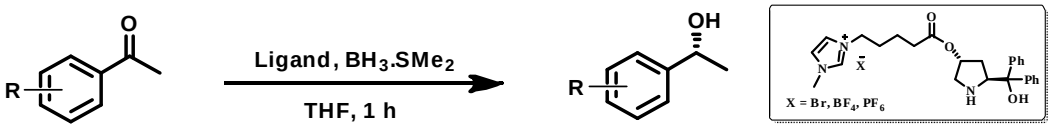

Scheme 1: Asymmetric Reduction of aromatic ketones by I.L. attached CBS Catalyst

We have synthesized the chiral ionic liquid of CBS's catalyst with different anionic

counter ions of ionic liquid. These ionic liquids have used for asymmetric reduction of acetophenon and their derivatives and provided 90% - 99% yield of relative alcohol with 48% - 87% ee. These ionic liquid was characterized by the NMR, IR, Mass and elemental analysis. The ionic liquid of CBS's catalyst can be recovered and reused upto 5 cycles without significant loose in yield and ee of relative products.

Environmental Factors affect the biodegradation of Petroleum Hydrocarbons in soil environment

Hardik Pathak and Saurabh Dave

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Soil pollution posses a big threat today. As the population increase day by day progress of urban civilization, pollution caused by petroleum products and their wastes is increasing in logarithmic manner. Various microorganisms are able to degrade a wide range of compounds and can tolerate high concentration of toxic contaminants. These organisms use these toxic compounds as a energy source and live their normal life processes. Metabolic processes of these organisms are capable of using chemical contaminants as energy source, rendering the contaminants harmless or less toxic in most cases. However, there are several environmental factors, type of poly aromatic hydrocarbons and physico chemical properties which affect the rate of biodegradation. This review provides an outline of the occurrence of PAHs in the environment and the ability of microorganism to degrade the compound. In addition, factors which affect the process of bioremediation are discussed.

Keywords- Bioremediation, Poly aromatic hydrocarbons, Biodegradation

Synthesis and Evaluation of triazolo-fused 1,5-benzodiazepine derivatives-A novel Seven-Membered Ring System of Biological Interest

Aruna Sharma

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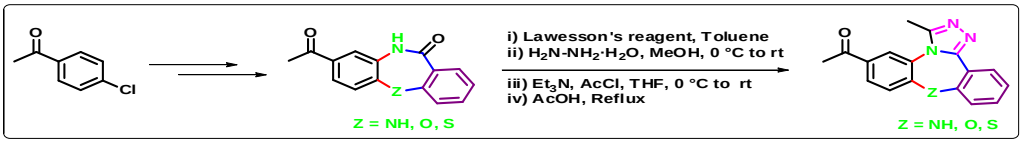

We developed methodology for thesynthesis of new 1-(3-methyl-9H-dibenzo[b,f][1,2,4]triazolo[4,3-d][1,4]diazepin-6-yl)ethanone and its derivatives from benzodiazepinone, benzoxazepinone and benzothiazepinone derivatives. These heterocyclic scaffolds have wide medicinal importance. Best results were obtained in anti-bacterial screening against Escherichia coli, Enterobacter cloacae, Staphylococcus aureus and anti-fungal screening against Candida albicans and Fusariumoxysporum. DPPH radical scavenging activities of compounds tested in doses 10, 20, 30, 40 and 50 µg/mL and were expressed as IC_{50} values and percentage of inhibition with means±SD of three different concentrations of synthesized compounds. The assignment of the structures of synthesised compounds was made by TLC, IR, ^{1}H NMR, ^{13}C NMR, LC-MS, elemental analysis and melting point analyses.

Effect of oxide layer thickness and silicon carbide MOS capacitor devices on gas sensing environment

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SiC has been for quite some time perceived as a standout amongst the best biocompatible materials, particularly in cardiovascular and blood-reaching inserts and biomedical gadgets. SiC MOS capacitor gadgets are utilized for gas detecting in high temperature and synthetically responsive conditions. SiC MOS capacitor gadgets are likewise utilized as hydrogen and hydrocarbon sensors in high temperature and artificially responsive conditions. Due to SiC, sensors can work at high temperatures which are more prominent than 1200K. Silicon carbide is artificially steady making it appropriate for unforgiving condition

detecting applications. In this paper a correlation between structure utilizing distinctive oxide layer (Tio2, Zno and Sio2) has been talked about and SiC MOS gadget and assorted job of SiC in its nanostructured structure has been likewise examined.

Keywords: - MOS capacitor, Silicon carbide (SiC), Sensor

Synthesis, spectral and biological studies of organosilicon(IV) and organotin(IV) complexes of nitrogen and sulfur donor Schiff bases derived from 4-amino-5-mercapto-3-methyl-s-triazole

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Some new organosilicon (IV) and organotin(IV) complexes formulated and synthesized by Schiff bases in 1:1 and 1:2 molar ratios. Schiff bases of 2-chlorobenzaldehyde and 4-flourobenzaldehyde synthesized with 4-amino-5-mercapto-3-methyl-s-triazole. Newly synthesized organosilicon and organotin complexes have been characterized by elemental analysis, molar conductance measurements, spectral studies, including UV, IR, 1H, 13C, 29Si, and 119Sn NMR. On the basis of these studies, the resulting complexes have been proposed to have trigonalbipyramidal and octahedral geometries. The nature of these complexes is non-electrolytic. With the help of these techniques, trigonalbipyramidal and octahedral geometries are proposed for the newly synthesized complexes. The biological activity of these complexes against various bacteria and fungi has been investigated and then compared with free ligands. The biological activity of these complexes against various fungi has been investigated.

Key words: Triazole, Schiff bases, biological, donor, spectral

Solvent Effects on the Photophysics and Photoreactivity of 6-Chloro-3-Hydroxyflavone: Spectroscopic and Kinetic Study

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The Photophysical and Photochemical properties of 6-Chloro-3-Hydroxyflavone

(CHF) have been investigated in different solvents such as Cyclohexane (CH), Acetonitrile (CH_3CN), Methanol (CH_3OH), Isopropyl alcohol (IPA) and Ethylene glycol (EG) and their mixtures. The polarity of the solvents and their ability to interact with CHF by donating and accepting H-bonds were found to strongly influence the UV-VIS absorption spectra and the emission spectra, as well as other Photophysical parameters such as fluorescence quantum yield and fluorescence life time. In addition, the nature of the solvent was found to influence the kinetics of CHF photorearangement to 6-Chloro-3-hydroxy-3-(2`-thienyl)-indan-1,2-dione, the reaction being different in CH_3CN as compare to other solvents.

Keywords: Chromone derivative, Fluorescence Spectroscopy, Polarity

Role of extension programmes in solving paddy straw issues in punjab

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Paddy residue mismanagement in the states of Punjab and Haryana has led to annual winter smog and health problems in Delhi and other places in North India. The main approach to reduce paddy residue burning has been to seek alternatives for residue utilisation and in-situ and ex-situ management. Some newly introduced paddy varieties by PAU, Ludhiana that takes lesser time to grow can extend the window period between paddy harvest and wheat sowing season. Straw Management System (SMS), now a mandatory fixture on harvesters is said to make mulching a more viable option but is yet to be widely adopted by farmers as it entails fuel and other expenses. KVK scientists create awareness among the farmers to stop paddy burning and do its management using paddy straw chopper shredder through extension activities. With the aid of extension programmes, farming community is made aware about the benefits of paddy straw chopper shredder in term of soil health improvement as well as human health beside managing the paddy straw. Various vocational and short term trainings are scheduled every month in Punjab to make farmers aware about the various agriculture problems and how these can be tackled. On the other hand, sowing of wheat in the midst of the stubble using a machine called happy seeder is possible. Here, we can conclude that the farmers should attend the KVK extension programmes and kisan melas, so that the proper management of paddy straw is done and farmers can give their valuable contribution in controlling the environment pollution

Phospholipase A1 from Bacillus tequilensis: Isolation, Optimization, Production, Purification and Characterization

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Phospholipase A1 (PLA1) is emerging as a promising candidate for white biotechnology because these have versatile application owing to their unique industry relevant characteristics. PLA1 yield lyso-phospholipids that are excellent emulsifier finding considerable usage in numerous industrial applications like cosmetics, food technology and pharmacy. Oil degumming is a crucial industrial process which involves specifically the use of phospholipases. The aim of present study was to optimize and purify PLA1 using cheaper source i.e. defatted rice bran (agro-industrial waste) from a soil isolate, subsequently identified as Bacillus tequilensis RG2. Defatted rice bran was used in solid state fermentation for the production of PLA1. Both one factor at a time and statistical approach was used to obtain maximum PLA1 production. The medium composition used was: peptone (1.827 % w/v), lactose (2.139 % w/v), rice bran oil (0.674 %, v/v), pH 8.0 and optimum physical conditions were incubation temperature of 40°C for 48 h. The PLA1 activity was observed to be 288.2 U/g .These optimized conditions were further used to purify wild type PLA1. The PLA1 of Bacillus tequilensis RG2 was purified by ammonium sulphate precipitation followed by Gel filtration chromatography (Superdex-200). The yield of the purified enzyme after all the purification steps was 13.4% with 6.92 purification fold. It was found to be active at broad pH range 7.0-10.0. The optimal temperature for PLA1 activity was 45°C but at 55°C it retains 80% of relative activity. The phospholipases acting at mesophilic range are best suited for oil degumming processes. The use of PLA1 has been limited due to its less availability as most of extracted PLA1 were patented. So there is increasing trend to isolate newer microorganisms for PLA1 production as they will provide a platform to achieve cost efficacy at industrial scale.

Quantum Parameters Based Study of Some Dihydropyridines Using DFT Method: A Theoretical Study

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Density functional theory (DFT) can predict a vast assortment of molecular properties such as molecular structures, molecular energies, vibrational frequencies, ionization energies, electric and magnetic properties etc. The usefulness of this method relies on the study of electronic parameters to identify the reactive sites to understand the probable action of these scaffolds. Further it also facilitates the relationship between the structural characteristics of drug and their inhibition efficiency against infectious microorganisms. In light of the above facts, we have studied the structural parameters such as energy (total), variation of electron density over HOMO and LUMO, charge distribution, absolute electronegativity (?), softness/ hardness (?/ ?) and fraction of electron transfer (?N) of some diethyl-1,4-dihydro-2,6-dimethyl-4-(2- chloroquinoline-3-carbaldehyde)pyridine-3,5-dicarboxylates (previously synthesized) heterocycles.
Keywords: DFT, HOMO, LUMO, DHP.

Screening of Herbal Medicinal Plants For Chlorogenic Acid As An Antioxidant

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Polyphenols are the secondary metabolites which are widespread in plant kingdom and they play essential role in growth, development and defence mechanism of plants. It is well known that phenolic acids which are the derivative of polyphenols are excellent source of antioxidants which have various pharmacological properties. The aim of present study

was to screen different medicinal plants which are good source of chlorogenic acid. For efficient extraction of chlorogenic acid from herbs 50% methanol was used as extraction solvent. Initially orbital shaking and sonication was used to distrupt plant cell walls, later on sonication was proved to be an effective method for extraction of chlorogenic acid within 30 minutes. Chlorogenic acid was identified by UV-Vis spectroscopy and thin layer chromatography. For quantitative analysis of chlorogenic acid in different herbs was performed by using UV-Vis spectrophotometer, resulting absorption spectra shown peak for the herbal extract at around 330 nm wavelength which was similar to standard chlorgenic acid absorption peak.Confirmation of phenolic acid was done by TLC silica gel aluminium plate as a stationary phase, mobile phase was Toulene: Ethyl acetate: Formic acid: Methanol (42.8:42.8:11.4:4.2) and detection was done under UV light at 254nm and 366nm. Rf values was found to be similar i.e. 0.18 for standard as well for Morus alba extract which revealed the presence of chlorogenic acid in Morus alba.The assay method was simple, accurate and convenient for the screening of chlorogenic acid in different medicinal plants.

CLIMATE CHANGE AND ITS IMPACT ON INDIAN AGRICULTURE

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Climate change now become serious problem of agriculture. Climate change resulted in increase in temperature, change in rainfall pattern, rise in sea level, melting of glaciers, floods, drought etc. become a global problem (Bates et al 2008) [1]. Since agriculture is highly depending on climate. Climate. Climate change is effect on agriculture output. Climate change leads to change in seasonal structure, irrigation technique, insect pest potential, diseases, degradation of land resource, decrease in yield and quality of crops and further increase in risk of crop failure due to floods and drought. Increase in seasonal mean temperature reduce the duration of many crops resulted in decrease in yield of crop. Decrease in production of rice about 40 % of total production in Jharkhand, Odisha and Chhattisgarh (Mahato 2014) [2]. Rise in temperature by 0.5° C in winter resulted in decrease in yield of rainfed wheat by 0.45 tons per hectare (Lal et al 1998) [3]. The production of rice is getting decrease by a tone per hectare if the temperature is get rise by 2° C. The production of Pearl millet is get decrease by 10 - 15 % with increase in temperature by 2° C in Rajasthan. The soybean yield is get decrease by 5% with increase in temperature by 3-3.5° C. The agriculture of coastal area is also get affected by climate change due to the fertile area is get prone to

inundation and salinization due to climate change. Hence steps should be taken by the government as well as the farmers taken to decrease the impact of climate change and to stop the climate change.

References:

[1] Bates, R. F., Fankhauser, S., and Hamiltion, K. (2008). Assessment of the effect of climate change on Borro rice production in Bangladesh using DSSAT Water: technical Paper 6. Intergovernmental Panel of climate change (IPPCC) Secretariat, Geneva 210 p.

[3] Lal, D. and Myint, H. (1998). The political economy of poverty, equity and growth: A comparative study. Oxford University Press.

[2] Mahato, G (2014). Climate change and its impact on agriculture. International Journal of Scientific and Research Publications. 4(4), 1-6.

Environmental Science

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Environment is an interdisciplinary field form of physical, biological and information sciences includes ecology, biology, physics, chemistry, plant science, zoology, soil science, geology and atmospheric science which are studied the environment problems then solved out these problems through environmental studies and environmental engineering. Environmental studies is related to social science for understanding public relationships, perception and their policies regarded to the environment and environmental engineering is focused on technique and method which are improve the environmental quality with respect to every aspect. Environmental scientists make system which is sought out the environment problems. These issues including interaction of physical, chemical and biological processes are sought out through the environmental science. It is an program that focused on the application of biological, chemical and physical principals to study of the physical environmental and the solution of the environment problems including pollution and degradation the nitration between human and environment and natural resources. The components of the environmental science are atmospheric science, ecology, environmental chemistry and geosciences. Atmospheric science is focused on the earth atmosphere including meteorology, greenhouse gas phenomena, airborne contaminants, noise pollution and light pollution. Ecology is study about the interaction between organisms in the environment and environmental chemistry is the analysis includes the chemical degradation in the environment. Geoscience is the study of environmental geology,

volcanic and evolution of the earth crust and also includes hydrology and oceanography. In the U.S. the national environmental policy act (NEPA) of 1969 analyses the several criteria of the environmental science and it is concluded that the environmental sciences derive the regulation of study about the all environmental aspects and sought out the specific problems by making system.

References:

http://www.ensci.iastate.edu.
Beychock et. al. (2005). Fundamental pf stack gas dispersion, 4.

Size-Dependent Interaction Studies of Gold Nanoparticles with Different Thiopurines

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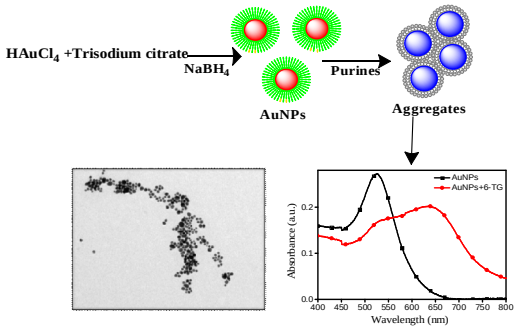
Thiopurines play a major role in anticancer drugs in treating acute lymphoblastic leukaemia but its higher dosage cause anaemia, nausea and vomiting. Therefore, the emphasis was given on the detection of drugs to reduce its side effect among patients. Nowadays due to the colourimetric response towards different biomolecules, plasmonic nano-materials attain great attention in the field of nanosensing. So, we have synthesized different size gold nanoparticles (AuNPs) by modifying the Fren's method for the quantification of thiopurines. The characterization of synthesized AuNPs was done using FT-IR, TEM, DLS, EDS and UV-visible spectroscopy. They showed remarkable stability for 10-15 days in the presence of long-range pH (3-12) and high concentration of the salt solution (100, 0.1M NaCl). Based on the variation in the inter-particle distance of AuNPs detection of different thiopurines was recorded using UV-visible spectra. It has been seen that the SPR peak of different size AuNPs in the range of 521-535 nm undergoes a redshift. Even, its intensity gets reduced with an increase in the concentration of purines with the development of a new SPR peak at 700 nm. However, the selectivity for purines found more in case of large nanoparticles at low concentration 10-7 M for 6-thioguanine and 6-mercaptopurine. Overall, these results indicate that AuNPs can be used as an effective sensing probe for the quantification of purines.



References:

1. Basu, S., Pande, S., Jana, S., Bolisetty, S., & Pal, T. (2008). Controlled interparticle spacing for surface-modified gold nanoparticle aggregates. Langmuir, 24(10), 5562-5568.
2. Basu, S., Ghosh, S. K., Kundu, S., Panigrahi, S., Praharaj, S., Pande, S. & Pal, T. (2007). Biomolecule induced nanoparticle aggregation: effect of particle size on interparticle coupling. Journal of colloid and interface science, 313(2), 724-734.

Analysis of Wheat Diseases in District Mansa

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Wheat (Triticum aestivum) is the most important cereal crop for the majority of world's populations. It provides approximately 55% of the carbohydrates. Wheat belongs to family Poaceae. Wheat is grown in all the states in India. Uttar Pradesh, Haryana, Punjab, Rajasthan accounts for major wheat producing states (80% of total production in India). During 2016-17 the total production of wheat in Punjab was 176.36 lakh ton approximately. Wheat is prone to numerous diseases like loose smut of wheat, covered smut of wheat, yellow rust of wheat, brown rust of wheat, black rust of wheat, karnal bunt of wheat etc. In the present study, numerous wheat diseases were analyzed in the wheat grown in district Mansa. The wheat was analyzed from mid-Jan to mid-April. The wheat samples were collected every week and diseases were examined. It was analyzed that maximum loss to wheat was caused by the attack of fungi. The symptoms of the diseases were noted. In case of loose smut of wheat and karnal bunt of wheat, fungus attacks the mature seed only. The black rust of wheat, yellow rust of wheat and brown rust of wheat occur by attack of fungi on leaves. The covered smut of wheat (stinking smut of wheat) is caused by attack of fungi on

fully matured wheat (10-15 days before harvesting). The spore color of parasitic fungi indicated the first symptom of disease like light brown in loose smut or black color in karnal bunt of wheat, black color in covered smut of wheat. The microscopic examination of collected fungi from these samples will further identified by molecular techniques and effect of fungicides will be studied.

Photo-Catalytic Degradation of Toxic Congo Red dye using Self-doped Carbon Nano-particles

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Herein, a facile approach is used for the synthesis of self-doped1 carbon Nano-particles using the waste printer ink as a carbon precursor is described which is usually thrown out. The waste ink is carbonized in muffle furnace at high temperature and further functionalization is done with nitric acid. These functionalized2 self-doped carbon nanoparticles (f-CNP) is further used for the selective photocatalytic degradation3-4 of toxic dye such as Congo Red5-6 (CR) under the sunlight7 irradiation of 150 min. The photo-degradation of CR by f-CNP is characterized by chemical techniques including UV-Visible absorption spectroscopy, Nuclear magnetic resonance spectroscopy. This method provides a better catalyst because of its ease in availability and easy to synthesize.

Keywords: Waste Ink, Self-doped carbon Nano particles, Congo red, Photocatalysis.

References:

1. Bhati, A.; Anand, S. R.; Saini, D.; Khare, P.; Dubey, P.; Sonkar, S. K., Self-doped nontoxic red-emitting Mg-N-embedded carbon dots for imaging, Cu(ii) sensing and fluorescent ink. New Journal of Chemistry 2018, 42 (24), 19548-19556.
2. Wang, X.; Cao, L.; Yang, S. T.; Lu, F.; Meziani, M. J.; Tian, L.; Sun, K. W.; Bloodgood, M. A.; Sun, Y. P., Bandgap-like strong fluorescence in functionalized carbon nanoparticles. Angewandte Chemie (International ed. in English) 2010, 49 (31), 5310-4.
3. Lachheb, H.; Puzenat, E.; Houas, A.; Ksibi, M.; Elaloui, E.; Guillard, C.; Herrmann, J.-M., Photocatalytic degradation of various types of dyes (Alizarin S, Crocein Orange G, Methyl Red, Congo Red, Methylene Blue) in water by UV-irradiated titania. Applied Catalysis B: Environmental 2002, 39 (1), 75-90.
4. Erdemoglu, S.; Aksu, S. K.; Sayilkan, F.; Izgi, B.; Asilturk, M.; Sayilkan, H.; Frimmel,

F.; Gucer, S., Photocatalytic degradation of Congo Red by hydrothermally synthesized nanocrystalline TiO2 and identification of degradation products by LC-MS. Journal of hazardous materials 2008, 155 (3), 469-76.
5. Zhang, Z.; Shan, Y.; Wang, J.; Ling, H.; Zang, S.; Gao, W.; Zhao, Z.; Zhang, H., Investigation on the rapid degradation of congo red catalyzed by activated carbon powder under microwave irradiation. Journal of hazardous materials 2007, 147 (1), 325-333.
6. Solano, A. M. S.; Garcia-Segura, S.; Martínez-Huitle, C. A.; Brillas, E., Degradation of acidic aqueous solutions of the diazo dye Congo Red by photo-assisted electrochemical processes based on Fenton's reaction chemistry. Applied Catalysis B: Environmental 2015, 168-169, 559-571.
7. Bhati, A.; Anand, S. R.; Gunture; Garg, A. K.; Khare, P.; Sonkar, S. K., Sunlight-Induced Photocatalytic Degradation of Pollutant Dye by Highly Fluorescent Red-Emitting Mg-N-Embedded Carbon Dots. ACS Sustainable Chemistry & Engineering 2018, 6 (7), 9246-9256.

Alpha-amylase inhibitors: Potent antidiabetic drug

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Diabetes is a disease caused hyerglycemia which can be treated using antidiabetic agents belong to class of insulin sensitizer, PPAR gamma agonist, sodium-glucose transporter 2 inhibitors, dipeptidyl peptidase- 4 inhibitors, and alpha-amylase inhibitors, Alpha-amylase peptide inhibitors are flexible and can opt formultiple conformations. It is complexedwith alpha-amylase in a 1:1ratio in the presence of calcium ions whereas chloride ions are required for the optimal structure of the active site of alpha-amylase. The complex formation is based on the induced fit hypothesis. The structure of alpha-amylase inhibitor resembles immunoglobulins and can opt multiple conformations (Konig et al., 1976). Other alpha-amylase inhibitors identified are curcumin, docosanol, tetracosanol, antroquinonol, berberine,

catechin, quercetin, actinodaphine,andrutin. Among these curcumin has a better binding affinity to alpha-amylase (Jhong et al., 2015). Procyanidins found in grape seed has been found to be a potent inhibitor than acarbose and catechin (Meltem et al., 2012). Likewise, camel milk is more effective than bovine milk (Mutamed et al., 2018). Lupeol is a potentmulti-target agent as a lead compound for alpha-amylase and tyrosine phosphatase (Tsai et al.,2016). Many in -vitro studies have been carried out for many medicinal plants and mucuna, albizzia and barberries have been found to be effective in the management of hyperglycemia (Mangesh et al., 2018).There is need to identify the chemical constituents of these medicinal plants and with the help of molecular docking,interaction mechanism can be identified and with inhibition assay IC50 values can be obtained that are helpful for defining the substituents using three-dimensionalstructure-activity (TSAR) relationship for future drug designing.

Keywords: Diabetes, hyerglycemia,antidiabetic, amylase, inhibitors

Solar-powered irrigation in agriculture

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Farmers have always played an important role in our society as they provide the world's population with food. So farmers can produce energy from the wind, the sun or the biomass and they can use it for their own farm, or, if they have a surplus, resell it to companies. Solar energy might be one of the easiest ways for farmers to produce energy. The use of solar energy in agriculture is becoming more popular and the energy developed from this renewable source can be used either on the farm or in the local power grid, providing the farmer with an additional income. One of the areas in agriculture that profits the most from solar energy is irrigation, especially in arid parts. The main cause is that using the sun for irrigation represents a virtuous circle: when the sun shines, it feeds the irrigation system, well, we know that the crops needs more water when the sun shines a lot. In this case, farmers cannot depend on the traditional irrigation system. The installation of solar pumps in countries which suffer from high temperatures and deficient water resources, the drip irrigation system could lead to an effective water management. This is all the more important as farmers have to face three dare: save water, money and energy. While these systems are still quite expensive and complicated to settle, many governmental projects are working on the democratization of the use of solar power in agriculture, which, in the future, could play a vital part in the management of the food and energy disaster. Farmers should use solar power so that to decrease cost of cultivation and helps in improving the environment.

Biological screening of tetradentate macrocyclic ligand based transition metal complexes

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A series of novel complexes were synthesized which are derived from ethylene diamine and L-Aspartic acid of the type [M (C12H22N6O4) X2] where metals [M=Co (II), Cu (II),] and X = Cl-, NO-3, NCS-]. The synthesized compounds were characterized by FTIR, and 1H NMR spectral studies. The electronic spectra of the metal complexes indicate a six coordinate octahedral geometry of the central metal ion. These metal complexes and the ligand were evaluated for antimicrobial activity against bacteria (E. coli, S. fecalis) and fungi (F. oxysporum, rhizopus). The macrocyclic complexes show more antimicrobial activity as compared to the ligands.

A facile and green approach for the synthesis of spiro[naphthalene-2,5'-pyrimidine]-4-carbonitrile via a one-pot three-component condensation reaction using DBU as a catalysts

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Pyrimidine is an important aromatic heterocyclic compound. It occurs naturally in substances such as vitamins (thiamine, riboflavin and folic acid), nucleic acid components (uracil, cytosine and thymine), coenzymes, purines, proteins, nucleotides, alkaloids and is an essential component of many drug molecules. Subsequently, pyrimidine template and its hetero-fused derivatives represent one of the most active classes of compounds possessing a wide range of promising activities like antileishmanial, antitubercular, antileukemic, antihypotensive, antiinflammatory, antiHIV, analgesic, antiulcer, antitumor, anticonvulsant, antiplatlet, antifungal, antiviral, antibacterial, antimalarial and antinociceptive. 1,8-Diazabicyclo[5.4.0]undec-7-ene (DBU) is a commercially available, cheap and homogenous catalyst. It is a sterically hindered amidine base and especially useful in reactions where side reactions due to the inherent nucleophilicity

of basic nitrogen are a problem.29 DBU is one of the strongest organic neutral bases (pKa= 12) and the +M effect of the adjacent nitrogen stabilizes the protonated species. It has been used in a variety of organic transformations and multicomponent reactions in recent years. A series of functionalized spiro[naphthalene-2,5'-pyrimidine]-4-carbonitrile derivatives were synthesized using 1,3-dimethylbarbituric acid, aldehydes and cyclohexylidene malononitrile in presence of DBU. The structures were confirmed by spectral data. X-Ray crystallographic studies of one of the compounds confirmed the structure. The crystal packing shows eight molecules in a single unit cell. The crystal structure also revealed intermolecular and intramolecular hydrogen bonding. Mild reaction conditions, high yields, short reaction time and easy separation are some of the salient features of the present protocol.

Reference

Rajeswari M., Pooja Saluja and Jitender M. Khurana , RSC Advances, 2016, 6, 1307-1312

Synthesis of Metal Oxide Nanoparticles and Their Application as Catalyst

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Metal oxides have high surface area and more reactive sites. Surface area of the oxides depends on the mode of synthesis. Because of these properties, metal oxides/ mixed metal oxides have wide applications such as catalyst and adsorbents. Metal oxides also work as superconductors and semiconductors as they are conducting in nature. Metal oxides are being used in cosmetics as antifungal agents and also have large applications in medicines. One of the most attentive applications of metal/mixed metal oxides is as catalyst because of more reactive sites. This article is focused on their applications as catalyst in various organic reactions. Several techniques have been proposed for the synthesis of nanometal oxide such as CVD, sol-gel synthesis, hydrothermal synthesis, sonochemical synthesis microwave synthesis etc. Preparing the nanometal oxide by these techniques has the better performances potentially.

Studies on Homobinuclear And Bivalent Transition Metal Complexes

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A new series of symmetric tetra dentate cyclic ligand and their transition metal complexes have been synthesized and characterized. Macrocyclic ligand has been synthesized by the condensation reaction of the thiodiglycolic acid and 2, 6 diammino pyridine or 2, 6 diammino phenylene in the molar ratio of 1:1. Light yellow colored ligand was precipitated out. The synthesis of the ligand was confirmed by IR and mass spectral data. The cobalt complexes were prepared by using the ligand and the metal salt in the ratio of 1:2. Colored cobalt complexes were synthesized and characterized by elemental analysis, molar conductance, IR, Electronic and EPR spectral studies in DMSO/DMF solutions. Six coordinated octahedral geometry were proposed for the complexes.

Biochemical Parameters Status of Students During Different Exercise Protocol

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The purpose of investigation was to examine the impact of own body weight and yogic exercises protocol on selected biochemical parameters among under-graduate students, total forty-five (N=45) students between age group of 17- 21 years from Punjab were selected as subjects. Pre-test post-test randomized group design was used as experimental design in which testing students were divided into three groups of fifteen each as randomly. Group-A (N1=15) own body weight exercises group, Group-B (N2=15) yogic exercises group underwent twelve - week training program and Group-C (N3=15) acted as Control group. Two experimental group was subjected to own body weight and yogic exercises protocol, consisting of six days per week morning session for the period of twelve - weeks. Subsequently biochemical parameters like erythrocytes count, hemoglobin level, hematocrit percentage, serum triglyceride, serum total cholesterol, high-density lipoprotein and low-density lipoprotein were selected as dependent variables. Beckman Coulter hematology cell counter was used to measure erythrocytes count, hemoglobin level and hematocrit percentage. For lipid profile measurement GPO-POD method with TBHA as chromogen, CHOD-POD

phosphotungstate method were used. After the collection of pertinent data, to know the effect of twelve - week own body weight and yogic exercises protocol on selected biochemical parameters of under-graduate students, to identify any significant differences between the pre-tests and post-tests means values of all the groups for the dependent variables paired t-test was employed with the help of statistical package for the social sciences (SPSS) 16.0. The level of significance was set at 0.05 percent. The result was confirmed that, after the participated in twelve - weeks own body weight and yogic exercises protocol significant changes were found in the erythrocytes counts, hemoglobin level, hematocrit percentage, serum triglyceride, serum total cholesterol, high-density lipoproteins and low-density lipoproteins among under-graduate students. On the other hand, no significant differences were found in mean values of pre and post-test of all selected dependent variables in control group.

AB Bhavanani, S Zeena, E Jayasettiaseelon, G Dayanidy (2013). Physiological and psychological effects of a yoga training programme in paramedical students. Yoga Mimamsa, 44 (4), 246-64.

Akbar Sazvar, Mohammad Mohammadi, Farzad Nazem & Nader Farahpour (2012). Effect of morning aerobic exercise on hematological parameters in young active males. Iranian Journal of Health and Physical Activity, 4 (1), 23-28.

Anjum Sayyed, Jyotsna Patil, Vilas Chavan, Shrirang Patil, Sujeet Charugulla, AjitSontakke and NeelimaKantak (2010). Study of lipid profile and pulmonary functions in subjectsparticipated in sudarshan kriya yoga. Al Ameen Journal of Medical Sciences, 3(1), 42-49.

Removal of Oil and Chemicals from Water Using Automobile (Diesel) Soot

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The high demand for clean drinking water stimulated the researchers to look for alternative water remediation technologies that are fit for industrial as well less developed countries to ensure a high quality of drinking water. The present paper discusses a range of Phytoremediation technologies to be applied in a modular approach to integrate and improve the performance of existing wastewater treatment ,especially towards the emerging micropollutants. Existing technologies for waste water treatment do not sufficiently address

increasing pollution situation , especially with the growing use of organic pollutants.It is known that carbon species can adsorb various organic pollutants in water. Carbon nanotubes, filter paper, meshfilms, graphene,Adsorption by the use of agro residues etc methods have been used for removing oil from water.Now a revolutionary method is developed that uses soot, emitted by diesel engines to remove oil and organic chemicals from water. While, it is impossible to bring down soot emissions to zero,it is possible to find use for the soot produced.This hydrophobic soot impregnated sponge showed high adsorption capacity for various oils, without the need for complex pretreatments,along with characteristics of being recyclable and retained 95% efficiency even after 10 cycles. The soot impregnated sponge can help in developing cost effective remediation process for organic pollutants like methylene blue, Ciprofloxacin and detergent from water. The Wet soot absorber can provide a large contact area between water & exhaust flow which increases the soot capturing probability. Such a development would additionally serve to repurpose automobile waste.

KEYWORDS: Diesel soot, organic pollutants, Adsorption

Conclusions: The highest oil absorption capacity found was 39g/g for engine oil without the need for complex pretreatments. So,this has practical implications justifying the need for new materials to mop up oil and prevent catastrophic outcomes.

References:

[1] Benjamin frankt,Robert schloglt ,national laboratory for materials science,Environ.sci.Technol ,2013

[2] Rahul vaish ,IIT Mandi,laboratory of engineering science and technology.

[3] International journal of pollution research on soot emissions.

Thiourea catalyzed aminolysis of epoxides under solvent free conditions

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Epoxides are versatile intermediate in organic synthesis as their ring can be easily opened by a variety of nucleophiles such as carbanions,[1] alcohols,[2] amines[3] and thiols[4] and provide a suitable route for the formation of C-C, C-O, C-N and C-S a - bond, respectively. The ring opening of epoxides by amines results in -amino alcohols, which are important intermediates in the synthesis of a large number of biologically active natural and synthetic products.

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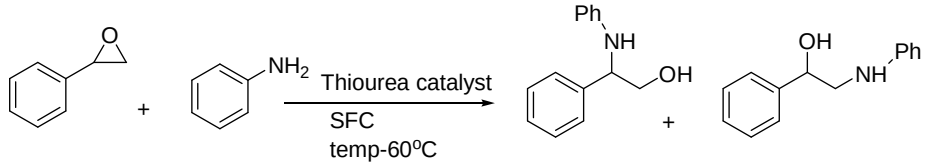
[1]Hanson, R. M. Chem. Rev. 1991, 91, 437.
[2](a) Firouzabadi, H.; Iranpoor, N.; Jafari, A. A.; Makarem, S. J. Mol. Catal. A - Chem. 2006, 250, 237-242; (b) Bradley, D.; Williams, G.; Lawton, M. Org. Biomol. Chem. 2005, 3, 3269- 3272; (c) Gallo, J. M. R.; Teixeira, S.; Schuchardt, U. Appl. Catal. A 2006, 311, 199-203.
[3](a) Ollevier, T.; Compin-Lavie, G. Tetrahedron Lett. 2002, 43, 7891-7893; (b) Das, U.; Crousse, B.; Kesavan, V.; Delpon-Bonnet, D.; Begue, J. -P. J. Org. Chem. 2000, 65, 6749-6751; (c) Reddy, L. R.; Reddy, M. A. Bhanumathi, N.; Rao, K. R. New J. Chem. 2001, 25, 221-222; (d) Sekar, G.; Singh, V .K. J. Org. Chem. 1999, 64, 287-289; (e) Bhanushali, M. J.; Nandurkar, N. S.; Bhor, M. D.; Bhanage, B. M. Tetrahedron Lett. 2008, 49, 3672-3676 and references cited therein.
[4](a) Li, Z.; Zhou, Z.; Li, K.; Wang, L.; Zhou ,Q. ;Tang, C. Tetrahedron Lett. 2002, 43, 7609. (b) Chen, J.; Wu, H.; Jin, C.; Zhang, X.; Su, W. Green Chemistry, 2006, 8, 330

β -Amino alcohols have been prepared in literature by ring opening of epoxides by amines in the presence of metal catalysts. But the use of metal catalysts suffer from limitations such as aliphatic amines fail to react with epoxide in the presence of metal catalysts because of deactivation of metal catalyst due to formation of stable complex between metal ion and amine, difficulty in work up and inert atmosphere conditions. To overcome these limitations, the use of small organic molecules as catalysts is the best alternative to metal catalysts for the synthesis of -amino alcohols in the environmentally benign conditions. In literature, there are only few reports for organocatalyzed ring opening of epoxides by amines using achiral catalysts which includes tertiary amines such as tributylphosphine, tributylphosphine, Et3N and double hydrogen bonding meta- and para-substituted phenols, biphenylenediols, and thioureas as catalysts.

Due to our interest in developing environmentally benign green processes for the

epoxide ring opening reactions we synthesized thioureas based organocatalyst for the regioselective epoxide ring opening reaction by amines. The results of these investigations will be presented.



Synthesis of SiO_2 using sol-gel method

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Development of mesoporous silica nanoparticles as carriers for drug delivery systems has increased during the last decade. Sol-gel is the simplest method and has the ability to control the particle size and morphology through systematic monitoring of reaction parameters. This study is focused on synthesis of silica by sol gel from TEOS and CTAB as pore generating agent. The synthesizing conditions are deionized water, ammonia, TEOS, CTAB and the resulting product was characterized by SEM, TEM, zeta potential and dynamic light scattering techniques. It was found that the specific surface area and porosity of the product i.e., silica particles are strongly affected by the addition of CTAB and water. SEM results show that the silica particles have spherical morphology. TEM measurement confirmed the amorphous structure of synthesized SiO_2 nanoparticles. The synthesis formulation affects considerably the particle morphology, which changes from spheres to rods when molar ratio of water is increased. A maximum specific surface area of 1480 m/g was obtained with size ranging from 2.5nm - 2.8 nm.

Keywords: Sol gel, silica nanoparticles, mesoporous

Synthesis, spectral and biological investigation of novel Schiff base and its transition metal complexes

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Co and Ni transition metal complexes of the novel Schiff base have been obtained via the condensation of 2, 5-hexanedione-3, 4-diacetyl with biguanide via both template and non - template method. These complexes were analyzed by 1HNMR, IR, and elemental analysis. DNA photocleavage and antimicrobial activity of the ligand and its metal complexes were investigated and reveal that metal complexes showed more potent as compare to ligand. Antimicrobial activity of the ligand and its metal complexes against bacteria and fungi viz. S. aureus, K. pneumoniaae and A. niger, Trichophytonrubrum respectively was evaluated in terms of zone of inhibition. MIC value for Schiff base and its metal complexes were also calculated.

Keywords: 2, 5-hexanedione-3, 4-diacetyl, Biguanide, Schiff base, DNA Photo-cleavage.

A Review on Biological Studies of Transtion Metal Complexes using Macrocyclic Ligands.

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Macrocyclic complexes based on transition metal compounds and multidentate ligands is an interesting field in chemistry and has been the subject of extensive research due to their potential applications in in-organic chemistry[1, 2] and biomedical chemistry [3-4]. Macrocyclic ligands and its complexes exhibit antimicrobial activities. The antimicrobial activities of the ligand and its complexes, as growth inhibiting agents, have been screened in vitro against different species of bacteria and fungi and the results concluded that the metal complexes are effective drugs against the tested strains as compared to the macrocyclic

ligand. Macrocycles have undergone complexation with variety of metal (3d) ions. Macrocyclic chelators can form highly stable complexes with transition metals. Macrocyclic complexes have shown various applications due to coordination behaviour and their pharmacological properties, i.e., Antibacterial, Antifungal and Anticancer. In this review, the recent advances towards biomedical applications of macrocyclic complexes are outlined.

Nanomaterial-Supported Enzymes for water pollution and monitoring in Point-of-Use Water Supply System

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Increasing pollution of global water sources and challenges in rapid detection and treatment of wide range of contaminants pose a considerable burden on public health. This issue is particularly critical in rural areas, where building of centralized water treatment systems and pipe infrastructure to connect dispersed populations is not always practical Point-of-Use (POU) water supply systems provide cost- effective and energy-efficient approaches to store, treat and monitor the quality of water. Currently available POU systems have limited access in dealing with contaminant species. Concentration also requires versatile POU systems to detect and treat contaminants and provide on-demand clean water. Among different technologies for developing rapid and sensitive water purification processes and sensors, enzymes offer one of the potential solutions because of their strong activity and selectivity towardschemical substrates. Many enzyme-nanomaterial composites have been recently developed that enhance enzyme stability and activity, thus facilitating the application of nanosupported enzymes in advanced POU systems. In this direction the strengths and limitations of nanosupported enzymes have been highlighted for their potential applications in POU systems for water treatment and for detection of contaminants. The mechanisms have been hereby summarized by which silica, carbon and metallic nanosupports improve enzyme stability, selectivity and catalysis. For each type of application, nanosupported enzymes offer higher performances than the free enzymes. Despite the promising results in laboratory settings, the nanosupported enzymes in real world POU systems require the implementation of multiple enzyme combinations & strategies for minimizing health risks associated with unintended release of nanomaterials.

To Convert Unused Wi-Fi Signals Into Usable Electric Power

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Demand for electricity increase , due to population growth, life style choices , economic expansion. Indian's electricity generation is primarily from coal. As a result of interconnection of grid and power plants been increased electricity transfer from one region to other. This results in imbalance of pollution loads between the communities & consumption region.
By this present study explain how electricity produce by Wi-Fi signals produce electromagnetic radiations. These electromagnetic radiations convert into electricity by device "Rectena". This device is made from 2D material called Molybdenum disulfide (MOS2) combine with antenna & rectifier. Firstly antenna picks up electromagnetic radiation & convert into alternating current. Then passes through diode which convert into direct current that use in electric circuit. This device captures signals up to 10GHZ including in range of Wi-Fi devices. Wi-Fi signals for the production of electricity is more prominent method as compare to other methods of production of electricity because it has greater efficiency, no production of disposal, less expensive , environment friendly. It helps to charge our electrical appliances. The Wi-Fi hotspots can use to broadcast its signal without special broadcast licence is 100 mw. Hence 100 mw. Is radiated to all directions. This is the noble method harvests power from environment. This paper represent review on formation of electrical power by using wireless fidelity.
Keywords:- Rectenna , electromagnetic radiation , electricity.

Adsorption characteristics of pretreated sawdust adsorbent for remediation of Zn (II) ions from aqueous solutions

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Discharge of untreated wastewater containing pollutants by industries has intensified environmental problems globally. It has resulted in deterioration of several ecosystems of the world. Heavy metals are among the major pollutants of effluent water. Of these, zinc is the heavy metal of major concern owing to its serious health impacts on humans, plants and other organisms. Various methods have been intensively investigated in the past decades for the removal of Zn (II) ions like coagulation, membrane filtration, precipitation, ion-exchange and adsorption. Among these various methods, adsorption using biosorbents has been observed as the most cost-efficient method for the treatment of water containing Zn (II) ions. Sawdust, a waste from timber industry has been found to be a low cost and environment-friendly adsorbent for the treatment of waste water containing heavy metals. The present paper involves study of adsorption efficiency of formaldehyde treated sawdust for removal of Zn (II) ions from aqueous solution. Batch mode studies involving effect of various parameters has been investigated in the present work. Isotherm studies were carried out using Langmuir and Freundlich isotherm models. Kinetic studies were done to study the mechanism of adsorption process.

Keywords- Adsorption, Zn (II) ions, Formaldehyde treated sawdust, Isotherm studies, adsorption efficiency.

Ecocriticism : A Review

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During the last few decades, pollution of the environment has posed a great threat to human beings as well as the mother earth. The contamination of natural resources has left us at the brink of ditch. The rainforests are cut down which reverses the effect of CO^2 sequestration and releases greenhouse gases, the fossil fuel is fast decreasing, the cycle of season is at disorder, ecological disaster is frequent now round the globe and our environment is at margin. Under these circumstances, new theory comes into light is Ecocriticism, the study of relationship between literature and the physical environment. It is a worldwide emergent movement which came into existence as a reaction to human beings anthropocentric attitude of dominating nature. The present paper seeks to explore the ecocritical perspectives as envisaged in some select world literature as well as Indian writing in English. This environmentally oriented study of literature brings about an ecological literacy among the readers who in the process become ecoconscious, thereby taking good care of Mother Nature. Environmental concern being one of the major concerns of the day, Ecocriticism has undergone rapid development during its short tenure since introduction. It is interpretive tool of analyzing nature writing which is commonly associated with Environmental criticism, Animal studies, Green Cultural Studies, Ecosophy, Deep Ecology, Ecofeminism, Ecospiritualism and the like.

Key-words: Environment, Literature, Nature, Ecocriticism

Significance of Crop Residue Management

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Crop residues are materials left in an agricultural field or orchard after the crop has been harvested. These residues include stalks, stubble (stems), leaves, seed pods etc. Crop residues on the soil surface reduce soil erosion from water and wind. Depending on the amount of crop residues left on the soil surface, soil erosion can be reduced by up to 90%

compared to an unprotected, intensively tilled field. It provides mulching/cover to field which helps to decrease evaporation and attain moisture for long time. It also provide insulation to crop against low temperature/frost in winter and against high temperature in summer. For example: - Mulching. Stubbles affect growth of weeds by covering the field and also help to reduce crop weed competition. Crop residues on the surface of a field slowly decompose, building up organic matter in the top two or three inches of soil. Organic matter is important to long-term fertility. While most compaction occurs during the first trip through the field, reduced weight and horsepower requirements with no-till, can help minimize compaction. Additional field traffic, required by intensive tillage, compounds the problem by breaking down the soil structure and promoting compaction. Use of crop residues reduces air pollution. If we grow next crops in standing stubbles then stubbles provide organic matter to soil but if we burn stubbles it cause air pollution. It keeps naturally occurring carbon in the soil for use as organic matter. Intensive tillage releases soil carbon into the atmosphere, as carbon dioxide, where it can combine with other gases to contribute to earth warming or the so-called "greenhouse effect". Use of crop residue is not time consuming process. This process save time and labour which helps to decrease input cost for crop.

Synthesis Of Chiral Sulfoxide Amides : Versatile Synthons In Asymmetric Synthesis

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The synthesis of chiral nonracemic sulfoxides with high enantiomeric purity has always drawn the attention of synthetic organic chemist over the years because of their synthetic utility. The sulfinyl functional group is important because it activates adjacent carbon-hydrogen bonds toward attack by base and the resulting anions can be alkylated or acylated with high diastereoselsctivity. Moreover, the reactions at positions more remote from the sulfur chiral centre can also proceed with high diastereoselsctivity.

In view of our interest towards synthesis of novel ?-lactam sulfoxides and their transformation into useful products, we envisaged to synthesize novel chiral sulfoxide amides using a simple, fast and efficient approach. We present here the results of studies towards oxidation of thio-amides. The substrates are prepared by the reaction of appropriate thioacetic acid with chiral auxiliaries such as L-phenyl alanine ethyl ester, L-valine ethyl ester and L-proline ethyl ester in the presence of a condensing agent like DCC. These subsrates undergo oxidation with different oxidizing reagents like m-CPBA, H_2O_2/CH_3COOH etc. to give the products in different diastereomeric ratios.

Drying And Dehydartion of Fruit Crops

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Fruits are important source of essential nutrients such as vitamins, minerals and fibre, as they contain more than 80% moisture content hence they are classified as highly perishable products. Thereby drying is a suitable alternative for perishable fruit crops to enhance their shelf life and dried foods play an important role in the food supply chain. Drying is one of the oldest preservation processes available to the mankind. The main feature of this process consists on lowering the water content in order to avoid or slow down food spoilage by microorganism. Fruits are dried to enhance storage stability, minimize packaging requirement, reduce transport weight and provide many health benefits including antioxidant activity. It is also necessary for the extraction of bioactive compounds which cannot be extracted from fresh products. An optimum drying system for the preparation of quality dehydrated products is cost effective as it shortens the drying time and cause minimum damage to the product. Energy utilization and nature of dried items are basic parameters in the choice of drying process. Drying of fruits through sun or solar techniques cause poor quality and contamination of products during their preservation. Therefore, modern technologies like osmotic dehydration, vacuum drying, freeze drying, superheated steam drying, heat pump drying and spray drying have great scope for the production of good quality dried products and powders. Dried fruits and their application in powder form have gained interest in the food industry.

Investigation of Preliminary Phytochemical in seeds of Cycas revoluta

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Cycas revoluta commonly known as sago palm belongs to gymnosperm species and cycadaceae family. Its parts like leaves, seeds, terminal shoots are traditionally used as medicines for cancer/ flatulence/ vomiting, high blood pressure/ rheumatism/ headache/ bone pain/ musculoskeletal disorder, astringent/ diuretic respectively. In present study the preliminary phytochemical activities and biological activities of its fruits are investigated. It's seeds were

dried for 15 days at room temperature and then powered to extract its chemical constituents with the help of soxhlet apparatus with different solvents for 72 hrs based upon polarity. The extract of each solvent was concentrated separately with rotary evaporator, dried over the water bath at 60°C and weighed. The hexane extract revealed the presence of saponin only; chloroform extract revealed the presence of carbohydrates, proteins, saponins; ethanol extract revealed the presence of carbohydrates, terpenoids, saponins, cardiac glycoside, flvonoids, and ethanol+water extract revealed the presence of carbohydrates, terpenoids, saponin, cardiac glycoside, flavonids, alkaloids.

Keywords: cycas revoluta, seeds, soxhlet extractor, carbohydrates, saponins

Carbon Footprint

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The total amount of greenhouse gases produced to directly & indirectly,support human activities, usually expressed in equivalent tons of CO_2.E.g. When you drive a car, the engine burns fuel which creates a certain amount of CO_2, depending on its fuel consumption & the driving distance. When you heat your house with oil/gas then you also generate CO_2.concept name, C footprint originates from ecological footprint, which was developed by William E. Rees & Mathis Wackernagel in 1990s.Your C footprint is the sum of all emissions of CO_2 which were induced by your activities in a given time & calculated for the time period of a year .These greenhouse gases CH_4 & O_3 are normally also taken into account for the carbon footprint. They are converted into the amount of CO_2 that would cause the same effects on global warming. You can always convert kg carbon dioxide in kg carbon by multiplying with a factor 0.27 (1'000 kg CO_2 =270 kg carbon). For registered users,carbon footprint calculator on this website, which allows to store individual activities like, e.g. travelling by car/train/ bus,fuel consumptions, electricity bills etc. Most of carbon footprint emissions come from "indirect" sources, e.g. fuel burned to produce goods far away from the final consumer. These are distinguished from emissions which come from burning fuel directly in one's car or stove, commonly referred to as "direct" sources of the consumer's carbon footprint. Carbon footprints are more focused than ecological footprints since they measure merely emissions of gases that cause climate change into the atmosphere. An individual's, nation's, or organization's carbon footprint can be measured by undertaking a GHG emissions assessment & Life-cycle assessment (LCA), Another method is through the Greenhouse Gas Protocol.

Nutracuticals Versus Pharmaceuticals - A Paradigm Shift in Health Care Sector

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Presently, safety of environment and health are major issues of concern all over the world. People are exposed to a variety of health related problems generally arising due to malnutrition, unhealthy life style or adulterated foods and are looking for some safer alternatives for the management of various health related issues. Pharmaceuticals have certain pros and cons, thus people are more inclined towards the nutraceuticals, functional foods and dietary supplements. Nutraceuticals- a term coined by Dr Stephen De Flice are foods with therapeutic potential. Nutraceuticals have received a lot of interest in the recent past because of their nutritional and pharmaceutical potential along with presumed safety. These are helpful to deal with various life style disorders and other health problems. In the last ten years an explosive growth in the multi billion dollar nutraceutical industry has been witnessed. Nutraceutical market is expected to reach USD 578.23 Billion by 2025 with CAGR 8.8%. Although there are several evidence in support of role of various nutraceuticals in health care sector, yet a plenty of efforts are still required to fully explore their therapeutic potential. Accessibility and consumer safety are also issues of major concern and needed to be addressed. This review has been focused on nutraceuticals, their role in health care and future prospects of nutraceutical industry. A paradigm shift from pharmaceuticals to nutraceuticals with a prophylactic approach is seen in the recent past and possess future prospects as well. Preventive health care seems to be the best option keeping in mind various life style diseases and rising health care costs.
KEY WORDS: Dietary supplements, Functional foods, Health care, Nutraceuticals, Pharmaceuticals.

Ultrasonication Accelerated Synthesis of 5-arylidene-2,2-dimethyl-1,3-dioxane-4,6-diones via Addition-Elimination Reaction of Aromatic N-oxides and Meldrum's acid

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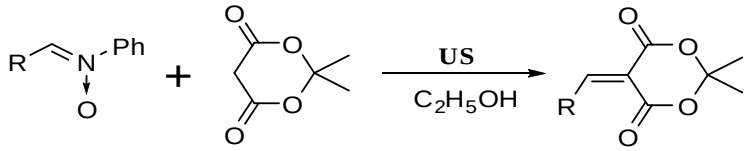
Meldrum's acid and its derivatives have been a hot synthone for the synthesis of pharmacologically significant heterocyclics, arylidene products of this molecule serves as

Michael acceptors and serves as dienophiles in cycloaddtion reactions. Present protocol disclose the condensation of arlynitrones with Meldrum's acid for the synthesis of 5-arylidene-2,2-dimethyl-1,3-dioxane-4,6-diones under environment benign reaction condition. The reaction proceeds via addition-elimination way and afforded the desire products in very good to excellent yield (Scheme 1).



Scheme 1. Addition-elimination reaction of nitrones and Meldrum's acid.

A variety of aromatic N-oxides were synthesized and reacted with Meldrum's acid without the aid of any catalysts. Selectively, 5-arylidene-2,2-dimethyl-1,3-dioxane-4,6-diones were obtained in excellent yields with very small amount of bis-product under this environment benign reaction condensation. All the obtained products were further characterized by spectroscopic techniques.

Site Selection For Nesting Colonies By Common Baya Weaver (Ploceus philippinus) in Jammu

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The selection of different nesting sites and plastering of nests by Common Baya Weaver (Ploceus philippinus) was studied during March 2013-January 2015 in Jammu. In Common Baya Weaver (Ploceus philippinus), the male preferred Acacia nilotica trees the most for nesting by about 36.7%, Ficus religiosa (18.8%), Zizyphus jujuba (17.3%), Mangifera indica by (8.26%), Albizzia lebbeck (6.83%), Cassia fistula (5.41%), Eucalyptus globulus (4.55%), Butea monosperma (1.99%) alongwith preference for thickets of Saccharum munja by 0.16%. Moreover, 38.20% of nesting colonies of Common Baya Weaver were found on the trees that were hanging over running water streams followed by 25.84% of colonies on trees present over water ditches and least preferences for trees present in the premises of villager's house by 3.37%. Common Baya Weaver also exhibited differential use of plastering material inside the nest such as mud, dung or human excreta. It was observed that, plastering of nest was higher on right side than that of the left side, on an average with 5.84 gms of

plastering material on right side and 3.42 gms on left hand side of nest. Overall visits made at different study sites with nesting material was evaluated to be highest for helmet nests with mean of 8.5±1.80 (visits per hour) as compared to complete nest with a mean of 5.25±1.78 (visits per hour), but for plastering material, highest visits were made for complete nests with mean of 9.5 ± 2.06 (visits per day) as compared to helmet nests by 7.25±1.47 (visits per day). In addition to it, a significant positive correlation was found between nest height and tree height.

Keywords: Common Baya Weaver (Ploceus philippinus), plastering, tree species and nesting colonies.

Environmental Sustainability and Human Values

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Sustainable development is a multidimensional concept with three interacting angles ecology, economics and ethics. Sustainable development does not end with the sustainability of just the environment and resource system but also requires sustainability of economic and social systems. Environment is the basic need for all the living beings because every necessity for them depends upon it. Unless the environment is protected, the existence of life on the planet would be impossible. That is why environmental issues have become so sensitive and globally important. All people must give their contribution for the betterment of environment. Environmental ethics help define man's moral and ethical obligations toward the environment. But human values become a factor while looking at environmental ethics. Human values are the things that are important to individuals and they then use to evaluate actions or events. In other words, they assign value to certain things and then use this assigned value to make decisions about whether something is right or wrong. Human values are unique to each individual because not everyone places the same importance on each element of life. The development has both pros and cons. On the one hand, technological development has affected almost every aspect of human life and on the other hand, it has its devastating effect on the nature itself. Thus mankind faces double challenges from modern machines and from saving the nature, the mother earth. All people need to have a common understanding of the role played by human beings in reducing or worsening environmental deterioration for

sustainable development as many ethical issues are also there. People of different cultures perceive these problems differently. The aim of this study is to figure out and tackle some of the thorny sustainability issues that are important. This also compares the level of environment related human values as well as the actual behaviour towards environment. It should be decided that either we should care about environment because it is economically valuable or because, nature has intrinsic value.

Keywords: Environmental ethic, human values, sustainability.

Integrated Nutrient Management For Sustainable Productivity Of Rice

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The over use of chemical fertilizers for a longer period of time has resulted in deterioration of soil health, stagnation on productivity and insecurity of quality food. Thus there is urgent need to increase the productivity of rice through organic nutrient management to face the higher demand of growing population. Application of green manure at 10 t/ha + inorganic fertilizers gave significantly higher grain yield in low land rice (Subbaiah, 1998) [1]. Singh et al, (2006 a) [2] observed that green manuring + 50% RDF resulted in significantly higher yield of rice as compared to 150% recommended NPK level alone. Natrajan and Kuppuiswamy (2000) [3] reported that Biogas slurry + green manure + phosphor bacteria produced higher yields 5.81 t/ha as compare to single super phosphate application alone (5.48 t/ha). Green manuring of dhaincha before transplanting rice increased the yield significantly compared to recommended fertilizer dose of 60 kg N, P2O5 and 25 kg ZnSO4 /ha (Dhiman et al., 2000) [4]. Dwivedi et al. (2006) [5] observed that application of 60 kg N/h + 30 kg/ha through poultry manure + 30 kg N/ha through vermicompost recorded the maximum grain (58.3 q/ha) as compared to 120 kg N/ha through urea. Singh et al. (2006b) observed that green manuring + farmyard manure 10t/ha produced significantly higher grain yield (3.8t /ha) [6] of Basmati rice than other sources of nutrients. Thus, INM in rice helps to increase the productivity and decrease the over use of inorganic fertilizers.

References:

[5] Dwivedi, S., Singh, R. and Ghosh, G. (2006). Effect of integerated nitrogen management on yield attributes and yield of rice (Oryza sativa). National Symposium on Conservation Agriculture and Environment. October,26-28, BHU, Varanasi, PP:202-203.

[4] Diman, S.D., Nandal, D.P and Hari, O.N. (2000). Productivity of rice (Oryza sativa)

Wheat (Triticum aestivum) cropping system as affected by its residue management and fertility levels. Indian Journal of Agronomy. 45(1):1-5.
[3] Natraja, S. and Kuppuswamy, G. (2000). Effect of rockphosphate enriched organic manures in rice blackgram cropping sequence. Oryza 37(2): 54-55
[1] Subbaiah, S.V. (1998). Studies on complimentary use of granulated inorganic fertilizers in conjuction with organic manures for sustainable rice production. Report of ICAR-Apcess Fund Scheme, Directorate of Rice Research, Hyderabad, PP:15-16.
[2] Singh, O.P., Singh G., Kumar, V., Prasad, S., Singh, D., Chaudhary, V.P. and Singh, R.K. (2006a). Effect of integrated nutrient management on yield and economics of rice (Oryza sativa) wheat (Triticum aestivum) cropping system in rainfed lowlands. National Symposium on conservation Agriculture and Environment. October,26-28, BHU, Varanasi, PP:210-211.
[6] Singh, D.K., Bisht, P.S., Pandey, P.C. and Kumar, A. (2006b) Production potential of basmati rice through different nutrient sources. National Symposium on Conservation Agriculture and Environment. October,26-28, BHU, Varanasi, PP,194-195.

Effect of initial sugar concentration on the physico-chemical characteristics and sensory qualities of cashew apple wine

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The technique for the production of wine from nutritious cashew apple has been standardized. The extracted cashew apple juice was treated with 0.5% food grade gelatin during heating for reducing the tannin contents. The TSS of the treated juice was ameliorated with sugar syrup and 0.1% diammonium hydrogen phosphate (as nitrogen source) to prepare the must. The fermentation rate of the must was found better for a week and reduced thereafter due to higher concentration of alcohol and low fermentation efficiency of the yeast. The fermentation carried out by the Saccharomyces cerevisiae var. ellipsoideus was completed in 15 days. After storing the base wine for six months the physico- chemical characteristics and sensory quality of the product was assessed. The retention of ascorbic acid was better in wine with higher initial sugar concentration (ISC) whereas the titrable acidity, volatile acidity, total esters and total phenols increased and aldehydes decreased with higher initial sugar concentration. The sensory quality of the cashew apple wine revealed that the product having 8.25% alcohol had an edge over other treatments.

Keywords: Cashew, Anacardium occidentale, wine, physico-chemical characteristics, initial sugar concentration, fermentation, sensory quality.

Spectral Preparation of RTS beverage by blending three different genus and evaluation of shelf life of processed product

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RTS beverage is a liquid ready to serve drink and beverages prepared by horticultural produce are nutritional along with good taste, aroma and flavor. Research experiments on preparation of value added nutraceutical RTS from Kagzi lime blended with Aloe vera and Rose (at 50: 30: 20 juices) were done by following standard recipes. Prepared product, RTS beverage was stored for 90 days at room temperature to study storage stability and overall acceptability along with study of variation in TSS and pH. A panel of 8 judges evaluated the products at the end of 90 days storage for their quality attributes like appearance, flavor, taste and overall acceptability. The RTS beverage prepared with 15% juice, 12° B TSS and 0.44 % acidity and prepared with 20% juice, 10° B TSS and 0.50 % acidity were rated as best recipes with highest scores for organoleptic quality. These recipes were recommended for commercial production of RTS beverage on large scale. Blended RTS of Kagzi lime is rich in nutritional quality and it surely add value to processed products.
Key words : Aloe vera,Rose, RTS, Lime.

Use of Advance Edible Coatings for fruit crops

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Postharvest quality management of horticultural produce through eco-friendly treatments is an emerging field. One of such promising and emerging postharvest treatment for extending the market life of lively respiring horticultural produce is 'Edible coating. An edible coating is defined as a cover material that is applied to fruits to improve appearance, solving problems of moisture losses, aromas and weight loss, reducing maturation processes,

prolonging shelf life and quality of fruits. Shellac and carnauba wax are often used commercially to coat apples and citrus to improve appearance by adding gloss, to prevent water loss that leads to shriveling and subsequent loss of marketability and to maintain quality through delayed ripening and senescence. Coatings with calcium chloride in apple helped to maintain firmness and color, while lemongrass containing coatings induced severe texture softening. Chitosan based coatings reduce the weight loss and increase the fruit firmness and total carbohydrates in banana fruit during cold storage. Chitosan also delayed the color development and reduce the rate of respiration and ethylene production during storage as compared to control . An experiment was conducted on application of indigenous skin coating materials for kinnow fruit and results showed that edible coating prepared from corn starch, stearic acid, and jojoba oil was best in terms of physico-chemical properties and significantly increased the shelf life of coated fruits as compared to uncoated ones.Thus it can be said that edible coating technology is a green technology and need of present era. Various food and drug administration's and food safety regulatory bodies have not only approved but also have prescribed the safe limits of edible coatings.

Keywords: postharvest, coatings, fruits, shelf life.

Effect of sugar and jaggery on the quality characteristics of papaya leather and shelf-life stability at room temperature

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The quality attributes comprised of moisture content, acidity, pH, optical density, TSS, total plate count. The quality parameters were done for fresh as well as stored papaya leather at 0, 15, 30, 45 and 60 days of storage under the room temperature and samples were packed in PET jars and glass jars. The TSS, pH, optical density and total plate count of papaya leather increased with increase of sugar and jaggery ratio at room temperature condition. The acidity and moisture content decreased with decrease in the level of papaya ratio and acidity values after 60 days of storage were observed the acidity T10.353, T2 0.349, T3 0.333, T4 0.322 and T50.367 for the sample stored in pet jar and T10.348, T2 0.360,T3 0.350, T40.333 and T5 0.359 for the sample stored in glass jar at room temperature. The moisture content of sample pet jar T1 16.9, T2 15.5, T316.7,T4 17.0 and T516.4 and samples of glass jar T1 16.7, T2 16.3, T3 16.0, T4 17.0 and T5 16.1 after 60 days at room temperature condition. The maximum overall acceptability score for the papaya leather

prepared with sugar and jaggery ratio samples T1 7.1inglass jar and the minimum score T1 6.8 in pet jarat room temperature. It was concluded that papaya leather prepared with sugar and jaggery ratio of T1, T2, and T3 samples was found to be superior of glass jar as compared to other samples.

Keywords: Moisture content, TSS, Acidity, Optical density ,pH, Total plate count, Sensory.

Effect of growth regulators on the vegetative growth and flowering of papaya

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Exogenous applications of GA3 did not yield any sex reversal phenotype on female and hermaphrodite flowers of papaya but caused a significant increase in peduncle elongation and inflorescence branch number in all treated plants. An increase in flower number was found in females but not hermaphrodites or males. Vegetative growth of papaya plant in terms of plant height, number of leaves, flowering characters like total number of female and hermaphrodite flowers per plant increased by foliar application of gibberellic acid - GA3 (150 and 200 ppm). The highest vegetative growth, yield attributing characters and yield were recorded with GA3 200 ppm. NAA foliar application was found to be effective in increasing plant height, total number of female and hermaphrodite flowers per plant next to GA-3 treatments. With 2, 3, 5 - Triiodo benzoic acid - TIB A (150 and 200 ppm) reduced plant height, increasing girth of stem and spread of plant was greatly influenced. Among the Plant growth regulators used, TIB A (150 and 200 ppm) resulted best particularly in the reduction of number of days require to first flowering.

Key words : GA3, vegetative growth, papaya, inflorescence , TIB A , NAA

New Fluoroquninolones And Their Antibacterial Activity Against Resistant Staphylococcus Aureus

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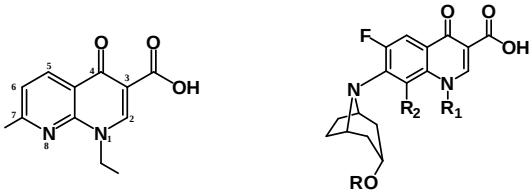
Fluoroquinolones are effective broad-spectrum antibacterial molecules that have economical route of synthesis and easy bioavailability. Ever since the discovery of nalidixic acid, this class of molecules are in use against severe infections. However the development of resistance against drugs by certain pathogens is both a natural and human expedited phenomenon[1] that is turning out hard to be treated. Methicillin-resistant S. aureus (MRSA) that is responsible for most of the nosocomial bacteraemias and serious illnesses like endocarditis, require more options. Currently, the only option for most of such resistant pathogens is vancomycin but with high treatment cost. Fluoroquinolone class of molecules have also been reported to be resistant against certain pathogens including Staphylococcus aureus. We envisaged extending their term by addition of new structural characteristics to its quinolone skeleton. Although a large number of substituents' at C-7 position of the fluoroquinolone skelton have been described, nitrogen containing bridged molecules are not as much reoprted[2]. We have synthesized endo -nortropine substituted at C-7 position of the fluoroquninolone skelton and its derivatives to evaluate their antibacterial activity against resistant Staphylococcus aureus and other re-emerging strains.



Nalidixic acid - The 1st Fluoroquinolone

New Fluoroquinolones Compounds with *Endo*-nortropine Substituents

Initial MIC values and toxicity results have indicated materialization of new fluoroquinolone molecules with a potential to be developed further. The presentation will concentrate on the synthesis and evaluation of these compounds.

References:

3. S. Redgrave, S.B. Sutton, M. A. Webber, L. J.V. Piddock, Trends in Microbiol, 2014, 22, 438-445.
4. J. S. Kiely, M.P. Hutt, T.P. Culbertson, R. A Bucsh, D.F. Worth, L.E. Lesheski, R.D. Gogliotti, J.C. Sesnie, M. Solomon, T.F. Mich, J Med Chem,1991, 34, 656-663.

Combined experimental and theoretical studies on the lithiation of 2,4-Lutidine with and without prior complexation with BF3 using different lithiating reagents

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Lithiation of pyridine and its substituted product is the most common approach for obtaining molecules that are of material and biological interest. Lithiation is a very useful tool for preparing methyl substituted pyridines derivatives. Position of lithiation of 2,4-lutidine in different solvents has been investigated experimentally and theoretically by with and without prior complexation with BF3. Also, a variety of different lithiating reagents like lithium diisopropylamide and lithium diethylamide were incorporated to investigate the position of lithiation. A carbanion of 2,4-lutidine formed after reaction with lithiating reagent at -78 0C quenched with benzaldehyde and iodine gave products corresponding to exclusive lithiation at alpha-methyl carbon. The yield obtained with these reactions in case of lithiation of BF3 adduct complexation were far superior to that obtained with lithiation of uncomplexed 2,4-lutidine.

7-methoxy-4-[(2E)-3-(4- methoxyphenyl)prop-2-enoyl-2H-chromen-2-one derivative used in pharmacotherapy of breast cancer

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Coumarins are classified as a member of the benzopyrone family. all of which consist of a benzene ring joined to a pyrone ring. The benzopyrones can be subdivided into the benzoalfa-pyrones to which the coumarins belong and the benzo-gama-pyrones, of which the flavonoids are principal members. Umbelliferone, esculetin and scopoletin are the most

widespread coumarins in nature. Coumarins, natural or synthetic, due to their wide range of biological activities, have become an interesting subject of investigation for many researchers. Coumarin scaffold has proven to have an important role in anticancer drug development due to a fact that many of its derivatives have shown an anticancer activity on various cell lines. Action of coumarins on tumor cells is carried out via different mechanisms and some of them show very good selectivity toward the cancer cells. Breast cancer is still the most frequent malignancy cancer in women and principal cause of cancer death for females worldwide. Of particular interest in breast cancer chemotherapy, some coumarins and their metabolites 7-hydroxycoumarin analogs have shown sulfatase and aromatase inhibitory activities. These selective derivatives have also been described as potential antibreast cancer agent. Hormone oestrogen has the crucial role in development of the breast cancer, the most frequent malignant disease in women, therefore many therapies are designed to block his activity. Cinnamoyl-coumarin derivatives were especially effective in oestrogen-dependent cancers, such as breast and ovarian cancer cell lines, the most potent. These compounds are selective nonsteroidal inhibitors of 14 ?-hydroxysteroid dehydrogenase type 1, an enzyme that catalyses NADPH-dependent reduction of the weak oestrogen, oestrone, into the most potent oestrogen, oestradiol.

Photocatalytic Degradation Of Dyes In Polluted Water Using Nanophotocatalysts : A Review

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Water pollution is one of the most challenging problems facing mankind at global level. Textiles industries specifically pollute the water sources. Dying process used in textile manufacture produces waste that contain many pollutants, making it high in organic and inorganic chemical content, and especially, strong colour. It may alter the physical properties of water and sunlight access, thus affecting photosynthetic activity in aquatic life. It is therefore essential either to remove the dyes from water or to treat them in such a way so as to minimize their effects on the environment. Incineration, ozonation, adsorption and photocatalytic treatment are the methods used to treat dye containing water. The use of first three methods are associated with certain limitations including production of toxic constituents in incineration and adsorption process, and alteration in the medium as pH, salt ions content, and temperature in ozonation process. However, photo catalysis has shown great potential

as a low-cost, environmental friendly and sustainable water treatment technology ends with harmless final products. Photocatalytic systems are effective for the degradation of many unwanted complex organic compounds through the use of efficient nanophotocatalysts activated under ultra-violet (UV) irradiation. This paper reviews the application of several nanophotocatalysts for degradation of various dyes in polluted water.

Organic farming for sustaining Environmental Health- A Review

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Regarded as a fringe movement of dubious repute, organic farming started from rather meagre roots; and yet has managed to gain respect and spread worldwide with sales in the order of about US$40 billion per year. Today one of the debates in this regard is whether organic farming is just a status symbol, or is it really better for us? Failures of green revolution, fall in biodiversity and crop yields, deteriorating levels of human end environmental health etc. make us rethink agriculture in general and sustainable agriculture in particular. For instance, in 2010, farmers, environmentalists and policy-makers in Kerala took the unprecedented step of enacting a policy that requires all Kerala growers to farm organically by 2020. Kerala's example shows that when done right, this kind of agriculture can be good for everyone in our global food system. This paper intends to provide a variety of perspectives to examine nature and relevance of organic farming and explain the pattern of growth of the organic food system, with reference to India. To its credit, the paper also addresses some of the issues, and a few uncertainties about its future development.
Keywords: Food; Organic Farming; India; global Food system

Hypothyroidism : An Issue Unresolved

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Hypothyroidism, a disease due to insufficient production of thyroid hormones and characterized by fatigue, weight gain, dry skin, irregular periods, bradycardia, cold intolerance

etc., if left untreated can lead to serious complications which may include cardiomyopathy, CHF or pleural effusion[1]. Various conditions like Hashimoto disease, thyroiditis, congenital hypothyroidism, environmental factors etc [2]. Bagcchi [3] reported that iodine deficiency is another one of the major reason behind hypothyroidism and it is surprising that although iodine production has tremendously increased during the last decades yet prevalence of hypothyroidism still exist which may be due to the unawareness of people in consuming either the inadequate iodised salt or salt with no iodine. Goitrogens and exposure to certain chemicals viz. cyanogenic compounds, resorcinol, pthalic acid etc. also slow down the metabolism and it is reported that in pregnant women with hypothyroidism inadequate fetal neurocognitive development may occur [4]. Therefore there is a need to aware the people about the proper use of iodized salt for the early management of the disease.

Sekected References

1. Krishan P and Singh Randhir. Clinical perspective of hypothyroidism. Journal of Applied Pharmaceutical Science, 2011; 01 (05): 64-68.
2. www.endocrine.niddk.nih.gov.
3. Sanjeet Bagcchi. Hypothyroidism in India: more to be done. The Lancet, 2014; 2: 778.
4. Gregory A. Brent. Environmental Exposures and Autoimmune Thyroid Disease. Thyroid, 2010; 20(7): 755-761.

An Overview on Concept of Pharmaceutical E-Learning

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As we all are aware that Computer's are essential in this advanced era of pharmacy and clinical trials and so is with softwares associated with it. This review aims to provide a detailed account on the various applications, softwares and use of computers in pharmacy1. Globally, the pharmaceutical institutes and industries have already utilizing the abundant potential of e-Learning, and are applying it for training of their skilled manpower2. Computer science and technology is deeply utilized in pharmacy field everywhere like in pharmacy colleges, pharmaceutical industries, research centers, hospital pharmacy and many more. Computer significantly reduces the time, expenditure, and manpower required for any kind of work. Development of various softwares makes it trouble-free to handle various type of data.1,3 Many industries have embraced computer technology because of the benefits of automated information processing. These include enabling routine, repetitive and monotonous tasks to

be conducted with consistent accuracy; standardisation and consistent use of terminology and nomenclature; and mass customization4,5. As far as Indian Research in phramacy area is concern in industries or academic institutions it is yet under consideration to use softwares for every aspect of research. In short, computers are playing critical role in pharmacy field, without computers pharmacy research will be time consuming and expensive6,.

KEYWORDS: Computer Science; Softwares; Pharmacy; Research; Computer Applications; Pharmaceutical Industries

REFERENCES :

1.https://www.online-sciences.com/technology/the-importance-and-uses-of-computer-technology-in-pharmacy/

2.Sandra M. Salter, Ajay Karia, Frank M. Sanfilippo, Rhonda M. Clifford, , Effectiveness of E-learning in Pharmacy Education, Am J Pharm Educ. 2014 May 15; 78(4): 83 doi: 10.5688/ajpe78483

3.Falcione BA, Joyner PU, Blouin RA, Mumper RJ, Burcher K, Unterwagner W. New directions in pharmacy education. J Am Pharm Assoc. 2011;51(6):678-679

4.Tsugihashi Y, Kakudate N, Yokoyama Y, et al. A novel Internet-based blended learning programme providing core competency in clinical research. J Eval Clin Prac. 2013;19(2):250-255

5.Shivraj Jadhav, Komal Nikam, Anand Gandhi, Narendra Shinde, Kishor Salunkhe Applications of Computer Science in Pharmacy: An Overview, National Journal of Physiology, Pharmacy & Pharmacology | 2012| Vol 2| Issue 1| 1-9

6.Ekins Sean, "Computer Application in Pharmaceutical Research and Development", Wiley Interscience: A John Wiley and Sons, INC., Publication, 2006, 3, 37.

Cryotherapy : A New Approach

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Cryotherapy (cold therapy) involves the use of very low temperature (freezing) to treat or prevent various ailments. It is considered as non-medical as it doesn't involve the use of any drug or medicament [1]. Moreover, it also offers various advantages like less preparation time, less infection risks, minimal wound care, no anaethesia required etc. It is believed to act by desensitizing or killing the irritated nerve by exposing the particular area to freezing temperature using cryotherapy booth for some time [2]. Although, this method is under the

developing phase but it is expected to be beneficial in weight loss, pain relief, reduce inflammation, dementia, reduce anxiety and depression, eczema and even in some types of cancer (to remove warts) etc. However if liquid nitrogen is used for producing cold temperature, then risk of asphyxiation and frostbite may occur [3]. So, if used wisely, this method has open a new era for the treatment of various dreadful diseases like cancer, however people who can't withstand low temperatures or have cardiovascular disorders are a limitation.

Selected References

1. https://en.wikipedia.org/wiki/Cryotherapy.
2. https://www.medicinenet.com/cryotherapy
2. Zawn Villines. What are the benefits of cryotherapy? Medical NewsToday, October 2017.

Recent Progress in Nonlinear Optical Polymeric Materials

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Nonlinear Optical (NLO) polymers have been studied extensively because there exists a great deal of potential for applications in optical data storage, optical telecommunications, optical switching, signal processing, etc. Organic polymers offer a number of desirable properties and hence are preferred over other materials for NLO applications. Inspite of many advantages, some problems like optical loss, optical quality of the materials, thermal stability, temporal stability of aligned chromophores, etc. remains an issue to be taken into account for using these materials for practical applications. Therefore, the main focus of researchers is to design the polymeric materials with a good combination of properties suitable for applications. In recent years, a lots of NLO polymers have been designed to meet the requirements for device applications. This paper describes the recent and important developments in the field of NLO polymers with special emphasis on their characterization techniques and the practical applications of these materials. Recently developed polymeric materials useful for practical applications have also been discussed here.

Determine the effect of mercuric chloride on the development of chrysomya megacephala (diptera: calliphoridae)

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Insect found on the corpses have been used to estimate the time that has elapsed between the death and discovery of a corpse (postmortem interval or PMI), to detect drugs or other toxic substances that might be the cause of death, and to determine the cause of death (Smith 1986; Gunatilake and Goff 1989; Lord 1990; Benecke 1998; Greenberg and Kunich 2002). Hence understanding the effect of drugs and toxins on fly development rate is paramount before its use for PMI determination because the presence of such xenobiotics can accelerate or retard fly development (Pounder, 1991; Carvalho et al., 2001; Gagliano-Candela and Aventaggiato, 2001; Introna, 2001). During the present study the larval growth rate of a forensically important blow fly species, Chrysomya megacephala (Diptera: Calliphoridae) was examined. The flies were reared on rat tissues that were previously exposed to Mercuric chloride (HgCl2) in different concentrations: Half lethal, Lethal and Twice Lethal by Intraperitoneal injection (i.p.). Body length, width, weight and mortality of treated groups and control groups were compared. Results demonstrated that the development rate of larvae between treated group and control group varied significantly. Mercuric chloride caused prolongation of the larval period. Development took longer time in the presence of high Mercuric chloride concentration compared to control. Mortality was significantly increased with increasing Mercuric chloride concentration as compared to control.

Keywords: Forensic entomology; Entomotoxicology; Chrysomya megacephala; Postmortem Interval; Mercuric chloride

Magnetically separable copper ferrite catalysed oxidative coupling of N-methyl tetrahydroisoquinolines

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Cross dehydrogenative coupling has evolved as an efficient methodology for construction of C-C bond. In the present work, magnetically separable copper ferrite nanoparticles were prepared for oxidative coupling reactions of N-methyl tetrahydroisoquinolines. Various nucleophiles were coupled with amines under oxidative conditions and the nanoparticles were reused effectively for the synthesis of C-1 substituted tetrahydroisoquinolines in moderate to good yields. This method requires mild conditions and provides an alternative environmentally benign route for synthesis.

Design and Synthesis of RAFT Chain Transfer Agents for Polymerization of Vinyl Monomers

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The reversible addition fragmentation chain-transfer process (RAFT) is an emerging area of polymer science and a powerful tool for the synthesis of polymers of a wide variety of monomers with controlled molecular weight having complex macromolecular architectures such as gradient or block copolymers, star polymers. The key to keep the living character in RAFT is the appropriate selection of RAFT chain transfer agents (CTA), which are usually thiocarbonylthio species, including dithioesters, xanthates, dithiocarbamates, and trithiocarbonates, etc. ZC(=S)SR is the general formula for all types of RAFT agents with different Z and R group. Selection of RAFT agents is very crucial for an efficient polymerization. Thiols are widely explored in the synthesis of thiocarbonylthio compounds. In the present study, thiol based novel RAFT agents with different Z and R groups has been synthesized by adopting two methods (i) alkylation of a carbodithioate salt with an alkylating agent which is common method of synthesis to all four types of RAFT agents. (ii) by esterification of commercially available S-(Thiobenzoyl)thioglycolic acid. Detailed kinetics studies are performed by choosing Styrene as monomer for all the synthesized CTA's. It is

observed that a few of them were able to control the radical polymerization owing to a linear increase of molar masses of polymers with monomer conversion. These RAFT agents were also used in the copolymerization and the reactivity ratio of copolymers were determined by Fineman-Ross method.

References

1. Peter J. Roth et al., Macromol. Rapid Commun. 2011, 32, 1123.
2. Xiaodong Zhuang et al., Polymers. 2018, 10, 318.

Impact of Ibuprofen Drug As A Toxicant In Forensic Entomology

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Entomotoxicology is an emerging field which deals with the potential use of arthropods for detecting the drugs and other toxins in decomposing tissues of corpses. It quantitatively and qualitatively identifies drugs and poisons which may be relevant to cause death and their effect on arthropod development, in order to assist the forensic experts in calculating post-mortem interval (PMI). Ibuprofen is a non-steroidal anti-inflammatory (NSAID), Schedule 'H' drug used as analgesic, anti-inflammatory and anti-pyretic in human and veterinary medicine. It provides pain relief by preventing the release of an enzyme called cyclo-oxygenase (COX), which is responsible for the production of various other chemicals by the body, including those known as prostaglandins which are found in all inflamed tissue. Ibuprofen inhibits the cells from producing prostaglandin. As a result of its properties, it is abused recreationally. This drug may also be found in cases of drug overdose related deaths. Considering the above facts, the effect of this drug on the development of blow fly Chrysomya megacephala, with forensic significance, was evaluated in the present study.

Cytogenetical Studies In Seven Ornamental Species Of Chrysanthemum (Asteraceae)

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In the present study amylase production was done using Solid Substrate fermentation on paddy Detailed cytological studies are conducted on seven ornamental species of Chrysanthemum, namely, C. carinatum (2n=18), C. cinerarifolium (2n=18), C. coronarium (2n=18), C. leucanthemum (2n=36), C. morifolium (2n=36), C. paludosum (2n=18) and C. segetum (2n=36). The chromosome report for C. paludosum chromosome is the first report for the species. Diploid species are mostly heterozygous for chromosomal alternation involving variable number of chromo-somes in reciprocal translocations. Large-sized ring-shaped bivalents accommodate two chiasmata each, and multiple associations are also mostly ring-shaped with distal localization of chiasmata. The presence of multivalents leads to unbalanced chromosomal distribution with formation of laggards and abnormal microsporogenesis, resulting in low pollen fertility.

Key words: Chrysanthemum, Structural heterozygosity, Reciprocal translocation, Multivalent, Chiasmata frequency.

Environmental Auditing

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An environmental auditing is a systematic, documented verification process of objectively obtaining and evaluating audit evidence for the determination that how well a business complies with environmental laws and regulations. Environmental auditing can be used as a risk management tool. The practice of environmental auditing is considered as a good business practice. More than 100 environmental audits have been carried out by SAI India over the last 20 years. The audit can be divided into 5 categories: air issues, water issues, biodiversity and environmental management system. This paper highlights the conceptual framework of environmental auditing and the study of various standards relating to environmental auditing.

Keywords: Environmental auditing, standards,practices.

Hetero-Junction Metal Titanaia Nanoparicles and Their Photocatalytic Activity-A review

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Semiconductor mediated complete photo-oxidation of environmental pollutant viz., pesticides has long been viewed as a potential means for the removal of these pollutant molecules. Towards this direction hetro-junctioned metal-titania nanopaticles being low-cost, eco-friendly and sun light activity could be remediate for this issue. Present work aims to review the up-to-date development of various approaches considered so far for the removal of aforesaid pollutants and will be presented.

Studies On False Truffles (Diehliomyces microsporus) Of Agaricus Spp. And Its Management

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Control of false truffle disease requires pasteurization of the compost for at least 12 hours at 50 to 60°C, with maintenance of air temperature at 58°C for several hours for surface pasteurization. During spawn run, temperature above 28°C should be avoided. When young truffle fruit bodies form, they should be gathered and burnt before they turn brown. Once the crop of mushrooms has been gathered, the rooms should be subjected to steam and temperature maintained at 70°C for 12 hours. Trays, woodwork and other structures should be treated with 2% solution of sodium pentachlorophenolate if false truffle was present. In some situations chemical fumigants e.g. methyl bromide are used in place of steam pasteurization treatment, but these maybe highly toxic to workers and must be used with extreme caution. Some losses due to false truffles have been serious, but perhaps the greatest cost to growers reside in the constant care that must be taken to prevent reinfestation of new crops once false truffle disease has occurred on the farm. With modern systems of continuous cultivation, susceptible crops are subject to contamination by workers and by flies.

Cytological Variability in Sorghum Halepense (l.) Pers. Populations from Haryana

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The genus Sorghum belongs to the tribe Andropogoneae which is a very large tribe of the family Poaceae. The tribe is represented by 111 genera and 967 species from World. The genus is represented by 60 tropical and subtropical species. It also comprises of 7 species in Indian subcontinent. S. halepense (L.) Pers., commonly called "Johnson grass" is a perennial species. The species is a common weed of cultivated lands during kharif season and is also found in fallow lands, waste places, in and around the hedges. It is a good fodder grass for grazing but sometimes may lead to poisoning due to the presence of hydrocynic acid in some tissues. It is used as folk remedy for blood and urinary disorders and also used as demulcent and diuretic Meiotic studies were performed on six populations of Sorghum halepense (L.) Pers. from various localities of Haryana. All the populations are tetraploid 2n=40 with x=10. The more common meiotic abnormalities are the presence of laggards at anaphases and telophases, chromosome stickiness and high pollen sterility. Many bivalents show early disjunction at Anaphase-I and in few PMCs loose association of bivalents has been observed. Thus, to bring out the genetic diversity, the present study was undertaken in the different populations of S. halepense (L.) Pers. from Haryana.

A Cytomorphological Account on Some Members of Family Asteraceae from Geographically Isolated and Ecologically Disturbed Habitats of Solang Valley, Kullu District, Himachal Pradesh

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Present cytomorphological surveys include meiotic studies and chromosome counts in 46 species covering 28 genera under 118 accessions collected from the various localities of Solang Valley in Kullu district, Himachal Pradesh at different altitudes ranging from 2,400

to 3,100 m. Presently, the genus Tussilago, a monospecific genus has been worked out chromosomally for the first time from India. The first ever chromosome counts have been made in Myriactis javanica (n=18). Artemisia salsaloides (n=10), Dandranthema boreale (n=36), Geum rivale (n=21), Ligularia ?scheri (n=30) are recorded as the first ever chromosomal counts from India. Additional/variable cytotypes are recorded in Anaphalis nepalensis (2n=6x=42), A. triplinervis (2n=6x=42), Artemisia nilagirica (2n=4x=36; 2n=6x=54), Artemisia salsoloides (n=10), Brachyactis pubescens (2n=4x=36), Dandranthema boreale (2n=8x=72), Taraxacum of?cinale (2n=8x=64) and Tussilago farfara (2n=2x=24) on the worldwide basis. Intraspecific polyploid cytotypes are reported in Anaphalis nepalensis (4x, 6x), Artemisia nilagirica (4x, 6x), Senecio rufinervis (2x, 4x), and Taraxacum of?cinale (2x, 3x, 4x, 5x, 6x) from the valley. Presence of B-chromosomes has been reported in Achillea millefolium (2n=18+0-1B), Artemisia salsoloides (2n=18+0-1B), Cirsium arvense (2n=34+0-1B), C. wallichii (2n=34+0-1B), and Solidago virgaurea (2n=18+0-3B).

Eco-friendly processes in organic synthesis: A Green Approach

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Now the main alarming threat to human kind is from the excessive use of hazardous chemicals in manufacturing, application of these chemical products in various fields which has resulted in an adverse impact on our environment. The chemicals from these chemical industries, pharmaceutical industries and other industries causing depletion of ozone layers, industrial waste in rivers and soils causing pollution of rivers, lakes even ground water. Similarly pesticide residue in food and water also damage our ecosystem. So the environmental and many more related concerns have raised public awareness towards environmental issue. So one step to minimize or reduce environmental depletion is go green with simple steps like environmentally friendly manufacturing without hazardous chemicals. In this solvent free synthesis of products, replacement of volatile organic solvents with green reaction media and use of water as alternative to volatile organic solvents are also a great step for the survival of our eco system. In the same context, the use of microwave assisted synthesis is gaining importance due to its unique benefit like enhanced reaction rate, increased yield and energy efficiency. So by introducing green chemical methods, chemistry, we can solve and reduce rather than to cause environmental problems.

Study of anti-bacterial activity on the Shell of Juglans regia

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Due to reduced costs and fewer side effects the use of medicinal plants are preferred to chemical drugs, and regarding the complications and harmful effects of chemical drugs the use of natural and herbal medicines have acquired enhanced interest of the researchers in recent years. Juglans regia (Walnut) roots have been used in the pharmacological system of medicine for various diseases like diabetes, rheumatic pains, fever, skin-diseases, malaria etc. In addition walnut leaves has also been used as anti-parasitic, blood purifier and in treatment of haemorrhoids etc. The present study has revealed that the extracts of shell of walnut shows potent anti-bacterial activity. The antimicrobial study of different crude extracts (from H2O/C2H5OH/acetone) of shell of Juglans regia showed that acetone extract has the highest activity. The results obtained showed that the growth of both B. licheniformis and E. coli were inhibited by all the three extracts of Juglans regia. The results of the studies conducted will be presented during the conference.

Incidence Of Skeletal Fluorosis Among The Population Of Malwa Region Of Punjab, India

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Fluorosis is a disease caused by the high concentration of fluoride in groundwater Fluoride toxicity has an alarming effect on the public health and due to this it has scientific interest. The present investigation was designed to assess fluoride exposure through drinking water consumption in the four areas belonging to Punjab state, India, with high concentration of fluoride in water. Ground water samples were collected using simple random sampling technique and analyzed by Ion Selective Electrode Method. The fluoride concentration in the drinking water was estimated to be higher than the prescribed limit of 1ppm. Skeletal fluorotic patients were identified and skeletal fluorosis grading was done. Hemoglobin content was estimated on the spot and was correlated with the socio-economic status of the patients.

A questionnaire was prepared in which all the aspects like socio-economic status and symptomology were included.

Key Words: Fluorosis, Hemoglobin, Skeletal fluorosis,

Importance of Genetic Engineering in Present Day Life

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Genetic engineering is the technique of excising, changing, or adding genes to a DNA molecule to alter the inbuilt information. With the modification of such information, the type or amount of protein is changed that an organism produces naturally. Applications of genetic engineering technologies are widespread ranging from the development of drugs, human gene therapy, enhanced agricultural productivity, food processing, and friendly environment to chemical and pharmaceutical industries. In medicine, genetic engineering has been used to mass-produce insulin, human growth hormones, follistim (for treating infertility), human albumin, monoclonal antibodies, antihemophilic factors, vaccines and many other drugs. Genetic Engineering is getting importance because of its use in different fields. Genetic engineering is an important tool for natural scientists. Genes and other genetic information from a wide range of organisms are transformed into bacteria for storage and modification, creating genetically modified bacteria in the process. By engineering genes into bacterial plasmids it is possible to create a biological factory that can produce proteins and enzymes. One of the best-known and controversial applications of genetic engineering is the creation of genetically modified food. In materials science, a genetically modified virus has been used to construct a more environmentally friendly lithium-ion battery. Some bacteria have been genetically engineered to create black and white photographs while others have potential to be used as sensors by expressing a fluorescent protein under certain environmental conditions. Genetic engineering is also being used to create Bio Art and novelty items such as blue roses, and glowing fish. In this way, present paper depicts various technological advancements occurring in Genetic Engineering and its importance in today's life.

Key Words: Genetic Engineering, Genes, DNA, rDNA Technology.

Effect Of Cisplatin In Combination With Herbal Drugs Against Murine Visceral Leishmaniasis

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Visceral leishmaniasis is a major health problem in Indian subcontinent, especially in states of Bihar, Assam, West Bengal and eastern Uttar Pradesh. It is locally known as kala azar in India. Available chemotherapy is far from satisfactory because antileishmanial drugs are expensive and have numerous side effects. The situation has further worsened with emergence of drug resistance in various endemic regions. The characteristic clinicopathological and immunological features are fever, hepatosplenomegaly, cachexia, pancytopenia, hypergammaglobulinemia and the absence of parasite-specific cell-mediated immune responses. Hence, any antileishmanial therapy that helps the shift of the immune response from Th2 type towards Th1 type may play a major role in cure and prevention of VL. Thus, to test the potential of this approach the effect of high dose of cisplatin (an anticancerous drug) in combination with immunomodulatory herbal drugs (T. cordifolia, W. somnifera and A. racemosus) against experimentally induced visceral leishmaniasis infection in BALB/c mice was evaluated. It was found that treatment of infected mice with cisplatin reduced the parasite load, however, further reduction in parasite load was observed in infected mice treated with cisplatin in combination with herbal drugs. Also, Immunological studies revealed that cisplatin alone and in combination with herbal drugs generated protective immune responses as observed by elevated levels of IgG2a antibody, IFN-?, IL-2 along with increased levels of CD4+ and NK1.1 cells.

Potential of pectin, ethylcellulose combinations as a film coating for colonic delivery

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Pharmaceutical coating processes have generally been transformed from what was essentially an art form in the mid-twentieth century to a much more technology-driven process. Controlled?release technology for drug delivery applications is designed to target the drug to

particular places or cells in the body and to control the duration and level of the drug in the body within a specified therapeutic window. Controlled?release dosage forms provide sustained drug release and require less frequent drug loading than conventional forms. Combinations of pectin and ethyl cellulose, in the form of an aqueous dispersion, were used as coating formulations. The coatings were assessed by a flow through dissolution system simulating in vivo conditions by changes in pH and residence time. Pectinolytic enzymes were used to simulate the bacterial flora of the colon. Drug release was controlled by the ratio of ethyl cellulose to pectin in the film coat. Increasing the proportion of ethyl cellulose and increasing the coat weight reduced drug release in pHl and pH7.4 media. The addition of pectinolytic enzymes to pH6 media increased the release of drug. Combinations of ethyl cellulose and pectin can provide protection to a drug in the upper gastrointestinal tract while allowing enzymatic breakdown and drug release in the colon.

Analysis of various Image Dehazing and Colour Correction Techniques for Underwater Image Enhancement

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The Underwater Images are being explored for the sustainable resources development. The underwater images are susceptible to the colour degradation and haze like effects due to difference in wavelengths of several colours in water and presence of suspended water particles. The water particles in the beam of light from artificial light device (camera) and the object suspects haze and backward scattering. So, the underwater images require Dehazing and Colour Correction to enhance the image characteristics in order to obtain the maximum details. We have studied various conventional underwater image dehazing and colour correction techniques such as Adaptive Histogram Equalization (AHE), Contrast Limited Adaptive Histogram Equalization (CLAHE), Brightness preserving Bi-Histogram Equalization (BBHE), Dark Channel Prior (DCP) colour contrast correction and latest techniques such as Convolutional Neural Networks (CNN), Fuzzy Intensification. From the analysis, we have found the latest techniques outperformed conventional techniques for underwater image processing in terms of average entropy, edge contents and colour distribution. In future, more advanced evolutionary and genetic algorithms need to be explored for underwater

image processing. Also, existing techniques requires multiple executions before accurate results are obtained. So, efficient algorithms require to be designed for image dehazing and colour correction. From significance point of view, the coral reef images can be explored for underwater image processing as reefs impose medicinal, biological importance, serves habitat to most of the underwater animal species, floras and faunas.

Keywords: Underwater Image Dehazing, Colour Correction, Coral Reef, Conventional techniques, Latest techniques

Micropropagation of an important medicinal plant Eclipta alba

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Eclipta alba (Linn.) Hassk. (also known as Eclipta prostrata Roxb.) belongs to the Asteraceae family and is commonly known as false daisy in English and bhringoraj or bhringraj in India. It is regarded as a weed of ethnomedicinal significance. It is known in the three major forms of traditional medicinal systems in the Indian subcontinent, namely, Ayurveda, Unani and Siddha as bhringoraaja, bhangraa and karissalaan kanni, respectively. The Ayurvedic system of medicine considers the plant as hepatoprotective. The demand for medicinal plants has increased globally due to resurgence of interest in standardized plant based extracts, culinary herbs, natural therapeutic essential oils and phytopharmaceuticals. This has resulted in an increased rate of plant extraction from natural habitat. Therefore, populations of high value medicinal plant species are decreasing at an alarming rate and status of many such plants is now threatened to critically endangered. To overcome these problems, during the last 20 years, in vitro culture techniques have been extensively developed and applied to conserve high value medicinal plants. Present study was taken for the development of an efficient micropropagation protocol for E. alba. Cultures were established on Murashige and Skoog medium (MS) supplemented with 2.5 µM each of benzyladenine (BA) alone. Effect of various cytokinins i.e. BA, Kinetin and thidizuron singly and in combination with NAA was studied. BA was found to be better cytokinins as compared with other cytokinins giving maximum shoot multiplication frequency. Addition of NAA further enhanced shoot multiplication frequency of microshoots. Microshoots were successfully rooted on MS media supplemented with 5.0 µM of IBA.

Microbiological risk assessment of raw salads in Mullana

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The objective of this study was to isolate and identify the presence of pathogenic bacteria like Escherichia coli, Salmonella spp and Vibrio spp) in different salad foods collected from different locations of MMDU university campus located in Mullana. Ten food samples of salads were collected from fixed and mobile vendors from area around 10 different location of MMDU campus in Mullana. The tested samples were capsicum, onion, cabbage, carrot, radish, tomato, cucumber, beetroot, broccoli, mix salad etc. Sterile polythene bags were used to collect these different samples. They were tested for the presence of microorganisms following conventional microbiological processes. Biochemical tests were done for the confirmation of Escherichia coli, Salmonella typhi and staphyllococcus aureus. Out of 10 food samples, eight were suspected to contain Staphylococcus spp, three were suspected to contain Escherichia coli and one was suspected to contain Salmonella spp. All these enteric pathogens could be the potential cause for food-borne illnesses. Therefore provision of education to the vendors would improve quality of street foods.

Studies on In vitro propagation in selected plants of Eucalyptus

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In silico methods can help in identify drug targets via bioinformatics tools. In the present study Eucalyptus is a diverse genus comprising primarily of flowering trees and a few shrubs belonging to the family Myrtaceae, a family which is mainly found in countries of the Southern Hemisphere. They are an important source of raw material for pulp and paper industry. Due to its widespread use many superior clones with higher growth and better wood quality has been selected. Therefore, the present study is focused at the development efficient in vitro propagation and shoot regeneration protocol in selected superior plants.

Cultures were established from nodal explants on MS medium variously supplemented with benzyleadenine (BA) and -naphthalene acetic acid (NAA). Maximum shoot multiplication frequency was observed on MS medium supplemented with 2.5 M BA and 0.5 M NAA. Shoot regeneration was achieved from leaf segments taken from microshoots on MS medium supplemented with 1.0 - 25.0 M NAA. Addition of 1.0 M BA further enhanced shoot regeneration frequency. Microshoots were successfully rooted on MS media supplemented 2.5 M of IBA.

Lead removal by fungi

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Present study investigates the isolation, identification and characterisation of Pb resistant fungi isolated from sewage, sludge and industrial effluents. Total 14 fungi strains were isolated from samples of Pb in potato agar plates modify with various concentration of lead from 100 to 500ppm. Fungi that are resistant to lead in primary screening are exposed to secondary. Among various potential strains, two strains of fungi (FPb-15 and FPb-21) were identified to remove 75 % of lead from liquid medium. Correlation coefficients of Pb biosorption by A. terreus and A. flavus were found to be greater for Langmuir isotherm than Freundlich isotherm. Hence the metal tolerance trait and removal efficiency of these fungi can be exploited in remediation of heavy metal from environment.

Shoot regeneration studies in Solanum tuberosum cultivar Kufri Mohan

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Potato (Solanum tuberosum L.) belonging to family Solanaceae is a very important crop in agricultural production throughout the world and reported to be grown in 180 countries worldwide. India is reported to be the fourth largest producer of potato and considered as

one of the most important vegetable crop. Conventionally potato is propagated vegetatively using tubers from previous year crop. But problems like infection by viruses and other pathogens limits the use of tubers as high quality seed material. Therefore there is a need to develop efficient micropropagation and shoot regeneration protocol for selected varieties of potato. Moreover shoot regeneration is considered as prerequisite for any genetic transformation protocol to be successful. Therefore the present study was taken for the development of an efficient shoot regeneration protocol for the selected cultivar of potato i.e. Kufri Mohan (KM). Sprouts and nodal explants were cultured on MS medium, supplemented with different hormonal combinations. Cultures were successfully established on basal MS medium. The effect of cytokinins and combination of cytokinins and auxins was evaluated on growth and morphogenesis of potato cultivar KM. Cultures were multiplied on MS media supplemented with 0.5 mg/l of BA. A procedure for direct and indirect plant regeneration of potato, is being developed. Culture growing on MS media supplemented with 2,4-D was showing callus formation while those cultured on MS media supplemented with NAA showing direct induction of leaves form explant. Efforts are being taken for induction of shoots form callus using various media combinations.

Synthesis and characterization of Ni(II) and Zn(II)carboxylate complexes with nitrogen donor ligand.

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Four mixed ligand coordination complexes of nickel and zinc were synthesized by reaction of sodium salt of 2-hydroxy-2-phenylacetate/2-chlorophenylacetate with NiCl2.6H2O/ZnSO4.7H2O and ethylenediamine in water/methanol mixture. These complexes have been characterized by using CHN, UV-Vis., IR, TGA and conductometric measurement techniques. Detailed physico-chemical analysis indicated presence of ionic complexes.
Key word: Nickel(II), Zinc(II), Ethylenediamine, Coordination complex.

Evaluation of Regional Leguminous Crop Cultivars of Haryana Towards Salinity Stress

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Production of food grain legumes is continuously decreasing due to their susceptibility towards existing environmental stress factors. Salt stress is one of the most prevailing abiotic stress imposing threats for agriculture food crops along with increasing world population and limited natural resources. Present study aims to determine the adverse effects of salinity stress on local varieties of four leguminous plant species of different regions of Haryana. A total of 11 genotypes belong to Vicia faba, Cicer arietinum, Vigna radiata and Vigna mungo were evaluated for salt tolerance under five different salinity treatments i.e. EC0, EC3.0, EC6.0, EC9.0, EC12.0, EC15.0, EC18.0 and EC21.0 (dS/m) during seed germination and early seedling growth stage. Seed germination (%) and seedling growth characteristics i.e. radical, plumule and total seedling length, seedling vigor index (SVI), fresh and dry weight of seedlings and salinity susceptibility index of 7-day old seedlings were investigated under different salinity treatments as compared to their respective control plants. Result showed that all traits decreased gradually with increasing level of salinity in all the genotypes. The genotypes showed variations for all the measured features within themselves and at different salt stress levels. The optimization of salinity stress level was done below EC15.0 dS/m for further screening of these genotypes for salt tolerance during vegetative and reproductive growth stages up to the harvesting of crop plants. Highly divergent germplasm may provide efficient source of salt resistance for breeding programs. This will help to develop improved cultivars with more adaptability and resistance towards salinity stress in near future.

Keywords: Salinity stress, Seed germination, Seedling growth, Seedling vigor

The major carbon source has profound effect on production and shade of the pigment produced by yeast isolated from soil sample

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The commercial use of synthetic pigments has decreased due to their toxic and other adverse effects on human health. Microbial pigments provide a good alternative source of natural pigments. Microbial pigments have number of advantages including rapid growth, easy production, easy processing and independence of weather conditions. Moreover, microbial pigments have numerous beneficial properties. Microbial pigments have potent applications in textile, pharmaceutical and food industry. In current study, the effect of major carbon source was studied from pigment producing yeast isolated from soil. The already reported media by Gilman et al. (1975) was used for screening of major carbon source. Glucose, fructose, dextrose, maltose and sucrose in media at similar concentrations were studied. Sucrose resulted in maximal production of pigment. The optical density was 0.968 at 460 nm. Other carbon sources resulted in less optical density. Also, the shade of color was intense with use of sucrose. Further investigation on media optimization is required for production of pigment from the selected yeast isolate.
Keyword: pigment, yeast, food industry, media, carbon source

Innovation in Transdermal Drug Delivery System : In-corporation of Nanoemulsions for Better Penetration and Therapeutics

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Transdermal drug delivery (TDDS) is a well-known route of administration. It is being extensively investigated as a viable alternative to drug delivery with improved bioavailability. Transdermal Drug Delivery Systems are one of the most rapidly advancing areas of novel drug delivery system, which are designed to deliver a therapeutically effective amount of drug across a patient's skin. Drug delivery via skin to the systemic circulation is suitable for a number of clinical conditions. It has advantages of bypassing gastric juices, liver enzymes and bile juices so this route has a lot of benefits and potential because of those

reason it has been a significant interest in this area. An emulsion is a bi-phasic system in which one fluid is dispersed in another with which it immiscible. Macroscopic separation of the phases is prevented by the addition of suitable emulsifying agents. In the vast majority of emulsion research, one of the liquid phases is water. Nanoemulsions are generally transparent or semi-transparent system characterized by high stability with the mixtures consisting of oil, surfactant, co-surfactant, and aqueous phase, which are single optically isotropic and thermodynamically stable. Nanoemulsions are also referred to as mini-emulsions, ultrafine emulsions and submicron emulsions. It is defined as an O/W or W/O emulsion producing a transparent product that has a droplet size from 20-200 nm and does not have the tendency to coalesce. It is promising for transdermal delivery of drugs as an efficient route of drug administration. Nanoemulsions gel is known as the formation of nanoemulsions based hydrogel by the addition of the nanoemulsions system intergraded into hydrogel matrix which influences a better skin penetration. In transdermal drug delivery the different routes of drug delivery are through horny layer, through apocrine sweat glands, eccrine sweat gland and through hair follicles. Most favorable route is through horny layer (Stratum corneum). Current researches have shown that nanoemulsions have a tremendous capability to cross the different barriers of the skin and so have improved bioavailability. The benefits of nanoemulsions with globules in nano-scale size of an emulsion do not rely on the emulsion physical properties itself.
Keywords: Nanoemulsions, TDDS, penetration, hydrogel

Therapeutic utilization of secretory products of some Indian medicinal plants

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India is endowed with herbal wealth of about 5000 plant species of known medicinal and aromatic properties. It has a variety of agroclimatic conditions, which increases its biodiversity and gives rise to many ethnic groups of users. In terms of both the volume and the value of medicinal plants exported, India ranks second in the world. Millions of rural households used medicinal plants in a self-help mode. Major sources of medicinal plants are obtained from folkloric information (51.48%) followed by Ayurvedic information (19.49%). The practitioners of the Indian Systems of Medicine used medicinal plants in preventive, promotive and curative applications. Analysis of information on medicinal plants indicates that around 8000 plant species are used by different systems of medicine in India. Whole plant, bark and roots are used in majority of such plants, while secretory products, seeds and stem are used in some cases. Although the bark and roots are the most common plant

parts used, depending on the potency other plant parts such as leaves, flowers, stem, secretory products, etc. are also used as medicine. Secretory products include secretions obtained either naturally or by making incisions in the plant. External secretory structures include trichomes, glands, nectaries, hydathodes and osmophores while the internal secretory structures located below the epidermis layer consist of the glands and ducts, which secrete oils, gums and resins, and laticifers, which secrete latex. There are several Indian medicinal plants, with various types of secretory products exhibiting multiple therapeutic uses. It is hoped that the review will open the avenue for the bio-medical scientists for clinical studies in future.
Keywords: Ayurveda, Clinical activity, Medicinal plants, Pharmacological activities.

Fragment Coupling Approach for the Synthesis of Macroheterocycles

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Keywords: macrocycles, Amino Acid Derivatives, Ring Closing Metathesis, Enyne metathesis

Macrocyclic molecules have renewed attention of biologist and chemists due to their ability to interfere with protein-protein interactions like biologics. Synthesis of these macrocycles has possessed challenges, and these could be synthesized by several methods. Metathesis and diversity-oriented synthesis together give a simple access to macroheterocyles with diverse functionalities.

In this lecture, fragment coupling approach for the synthesis of macrocyclicamino acid derivatives will be discussed. These fluorescentamino acids could be used to tag biopeptides for tracking and analysis in biological systems. All the molecules were characterized by 1H, 13C, IR and Mass spectroscopic data.

References:

[1] Hansen, E. C.; Lee, D. J. Am. Chem. Soc. 2003, 125,9582-9583,
[2] Miller, S. J.; Kim, S.-H.; Chen, Z.-R.; Grubbs, R. H.J. Am. Chem. Soc. 1995, 117, 2108-2109
[3]. Kotha, S.; Singh, K., European Journal of Organic Chemistry 2007, (35), 5909-5916.
[4] Kotha, S.; Bansal, D.; Singh, K.; Banerjee, S., Journal of Organometallic Chemistry 2011, 696 (9), 1856-1860.
[5] Kotha, S.; Seema, V.; Singh, K.; Deodhar, K., Tetrahedron Letters 2010,51 (17), 2301-2304.

Synthesis and Antimicrobial Activity of of Substituted Beta Lactams

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Beta-Lactam moiety is considered as a active pharmacophore that possesses almost all types of biological activities such as anti-tubercular, anti-bacterial, anti-fungal, anti-viral, anti-convulsant and anti-depressant activity, anti-histamines, anti-cancer, anti-inflammatory and analgesic and industrial importance. This diversity in the biological profile of this ring attracted the attention of many researchers and academicians to explore this ring. Keeping this in view, the present investigation reports synthesis and antimicrobial assay of some new beta lactam containing heterocycles.

Synthesis of Indolyl Linked Meta-Substituted Benzylidenes As Novel Ligands: Molecular Docking Studies And Biological Evaluation

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Synthesis of indolyl linked benzylidene based meta-substituted phenyl containing thiazolidinediones, rhodanine, and 1,3-dicarbonyl based acyclic analogs of isoxazolidinediones in an effort to develop novel ?-glucosidase inhibitors in the management of hyperglycemia for the treatment of type 2 diabetes is reported. The structure of all the novel synthesized compounds was confirmed through the spectral studies (LC-MS, 1H-NMR, 13C-NMR, and FTIR). Comparative evaluation of these compounds revealed that the rhodanine based compound i,e. Ethyl-1-(4-chlorobenzyl)-3-{3-[(4-oxo-2-thioxo-1,3-thiazolidin-5-ylidene)methyl]phenyl}-1H-indole-2-carboxylate showed maximum inhibitory potential against ?-amylase and ?-glucosidase giving an IC50 value of 0.28 ± 0.01 ?M. Furthermore, binding affinities in terms of G score values and hydrogen bond interactions between all the synthesized compounds and the AA residues in the active site of the protein (PDB code:

3TOP) to that of Acarbose (standard drug) were explored with the help of molecular docking studies. Compound Ethyl-1-(4-chlorobenzyl)-3-{3-[(4-oxo-2-thioxo-1,3-thiazolidin-5-ylidene)methyl]phenyl}-1H-indole-2-carboxylate was considered as promising candidate of this series.

Novel and green approaches for efficient synthesis of trisubstituted-triazoles

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1,2,3-Triazoles are an important class of compounds because of their wide coverage of biological and industrial applications including antiviral, antimicrobial, anti-HIV, anticonvulsants, anti-allergic,dyes, corrosion inhibitors, sensors and photo-stabilizers etc. Room temperature ionic liquids, PEG-400, water have shown great promise as attractive alternatives to conventional volatile and toxic organic solvents and considered as green reaction medium. 1,8-Diazabicyclo[5.4.0]undec-7-ene (DBU) is a sterically hindered amidine base and has been used in many organic transformations in recent years. In view of the emerging importance of ionic liquids, water, PEG-400 as green reaction media. We have investigated the synthesis of 1,2,3-triazoles and their novel hybrids in ionic liquids, DBU-water system, PEG-400 under different reaction conditions.

We report herein an efficient and environmentally benign synthesis of different 1,2,3-triazoles and their novel hybrid hetrocycles by reaction of various aryl azides with active methylene compounds and by copper (1) catalyzed azide-alkyne cycloaddition reaction in ionic liquids, DBU-water system and PEG-400 under different reaction conditions. The reactions can be achieved efficiently and yield the corresponding triazoles in high yields. Biological activities such as antibacterial, antifungal and antioxidant of these compounds have also been examined.

Synthesis and Photochemical Cyclization Reactions of Rigid Chain Linked Some Bis-chromene-4-one

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Photochemical reactions deal with the interaction of light with organic molecules. These processes provide such products which are not feasible under the ordinary thermal conditions. In the field of synthetic organic photochemistry, the reactions of the carbonyl chromophores have been the best studied chemically and mechanistically. 3-Alkoxy-bischromone-4-one are the dicarbonyl compounds which upon photo exposure may undergo ?-H-abstractions reactions to provide some useful cyclized products. On the basis of these considerations, we have investigated the photolytic reactions of some diphenyl linked bischromone-4-one. These compounds were obtained from the alkylation reactions of the various 3-hydroxy-chromen-4-one derivatives with suitable alkylating agent in the presence of ordinary laboratory conditions. The bischromone-4-one thus obtained were photolysed in suitable solvent medium in a Pyrex photoreactor by using light from an Hg arc lamp. The resulting photolysates were purified by using the silica-gel column chromatography followed by multiple crystallization in suitable solvents to provide the variety of bis-pyronopyrane products. The structures of the photoproducts and bischromone-4-one have been characterized from the rigorous analysis of their IR, 1H-NMR, 13C-NMR and ESI-Mass spectral parameters. The elemental analysis results were helpful to confirm their purity. The antimicrobial analysis of the resulting photoproducts has also been carried out against the selected bacterial and fungi strains. Some of the studied compound exhibited the promising antimicrobial behavior.

Synthesis and antimicrobial studies of new bispyrimidines

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Syntheses of heterocyclic substrates have been the subject of major attractions in the past decades due to their numerous applications in the modern society. The study of heterocyclic compounds is one of the most complex branches of organic chemistry which is equally interesting for its theoretical implications, for the diversity of its synthetic procedures

and for the physiological and industrial significances. Pyrimidine is a form of 1,3-diazine in which two carbons of the benzene ring are replaced with nitrogen atom. These heterocycles have gained much interest of researchers due to their presence in nucleic acids, vitamins, natural products and synthetic drugs. By considering these points in view, we have oriented the present investigations upon the synthesis of new bispyrimidines built around the rigid chains. These bisheterocycles were prepared from the cyclization reactions of bischalcones with urea, thiourea, guanidine hydrochloride. The alkylation reactions of chalcone with suitable dihalogenated linkers such as ?,?'-dibromo-o-xylene, ?,?'-dibromo-m-xylene, ?,?'-dibromo-p-xylene in the presence of anhydrous K2CO3, dry acetone and Bu4N+I- resulted in the formation of new bischalcones The chalcone required for these reactions was obtained from the condensation reaction of p-hydroxyacetophenone with biphenyl-carboxaldehyde under the alkaline medium. The structures of newly synthesized compounds have been fully corroborated from their spectroscopic techniques such as IR, 1H-NMR, 13C-NMR, & ESI-MS. The in vitro antimicrobial assessment of these compounds was also examine with the help of serial tube dilution method. Most of the prepared heterocycles demonstrated significant antimicrobial properties.

L- Asparaginase- A potent therapeutic agent

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L- Asparagine is a non essential aminoacid with carboxamide side chain. It is required by cells for the biosynthesis of proteins. L-asparaginase enzyme hydrolyze L- asparagine to L-aspartic acid and ammonia hence it is used as antitumoural agent. Tumor cells lack enzyme asparaginase synthethase that synthesize asparagine so they depend upon asparagine obtained from body fluids. L-asparaginase can be efficiently used for the treatment of acute lymphoblastic leukemia. Clinical trials have been conducted using L-asparaginase in combination with other drugs and radiotherapy, which have led to great success in the treatment. But few side-effects of using l-asparaginase are such as pancreatitis, coagulation abnormalities and allergic reactions. A broad range of microbes example bacteria, algae, fungi, yeast, actinomycetes, and various plants have been confirmed as the capable source of L-asparaginase. Various immobilization strategies have been applied to improve the stability of the asparaginase. The latest and updated information includes some new techniques of immobilization related to L-asparaginase such as gelatin, agarose, agar, and calcium alginate methods.

Nanoparticles in food packaging: Biodegradability and potential migration to food

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Lately, the appliance of nanotechnology into the food industry has been focused in the development of packaging material. Nanoparticles (NPs) are used as reinforcements to improve barrier and mechanical properties of polymers, resulting in packages with less demand for raw materials (more sustainable) and when are applied into biopolymers makes its production and use feasible, contributing to reduce the dependence on petroleum based materials. Food packages embedded with nanoparticles can alert the consumer about the safety of product. It can release preservatives to extend shelf life of food in package. Currently, food packaging and monitoring are a major focus of food industry related nanotechnology research. However, being a novel technology, there are gaps on its knowledge that pose questions to the scientific community, especially regarding its toxicity and ecotoxicity. Theoretically, the NPs have potential to migrate to the foodstuff packaged, but migration assays and risk assessment are still not conclusive.

Biosensors based on plants tissue: Advancement features

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Biosensor is an analytical device that works based on a chemical reaction and useful for the detection of a particular target compound or molecule. These methods are promising techniques and substitute to the traditional analytical approaches. It is because of the biosensor based technique having some crucial significant properties such as rapid performance, easy to use, cost effective analysis, high selectivity and sensitivity. Here we have emphasized the outline of the biosensor development based on plant and plant derived materials. In the early 1980s, another advance within the development of tissue-based electrodes was the invention that materials of plant origin are often used as effective biocatalysts. In 1981, Kuriyama and

Rechnitz created the primary plant tissue-based biosensor, utilizing a tissue slice from a yellow squash and a carbon dioxide electrode. The importance features of biosensor based on plant tissue are includes highly stable and high enzyme activity in its optimum conditions, easily available and very economical for the development of biosensors, the reliability of the developed biosensors is also so high, the more diverse plant and plant derived materials lead to more wide range of biosensor construction, the long storage stability of biosensors, as a significance of the long stability of biological materials, the elimination of dreary and time-consuming enzyme extraction and purification steps, with the resultant reduction in cost of biosensor development and applications

Keywords: Biosensor, plant, immobilization, transducers,

Complexes of Copper(II) Mandellate with Aromatic/Aliphatic Nitrogen Donor Ligands : Synthesis and Characterization.

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Mixed ligand copper(II) complexes play enormous role in many industrial and medicinal applicatons. Three Cu(II) mandellic acid complexes were synthesized by reaction of copper(II) sulphate pentahydrate with sodium salt of mandellic acid and ntrogen donor ligands (pyridine, ?-picoline and ethylenediamine). These complexes have been characterised by CHN, melting point, Uv-vis, FT-IR, conductometric studies.

Keywords: Copper(II) complexes, mixed ligand complexes, pyridine, ?-picoline, mandellic acid, ethylenediamine

Synthesis and Characterization of Novel Paddle Wheel Copper(II)Complexes: [Cu2(?-pic)2(phenylacetate)4], 1 and [Cu2(?-pic)2(2-chlorophenylacetate)4],2

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Two novel paddle wheel copper(II) complexes of composition [Cu2(?-pic)2(phenylacetate)4], 1 and [Cu2(?-pic)2(2-chlorophen-ylacetate)4], 2 have been

synthesized, characterized by elemental analyses, spectroscopic techniques (UV-vis and FT-IR), magnetic moment determination and their structures have been unequivocally confirmed by single crystal X-ray analysis. Complex 1 crystallizes in the triclinic crystal system with space group and complex 2 in monoclinic crystal system with P21/n space group. The geometry around each Cu(II) ion can be best described as a slightly distorted octahedron showing tetra-carboxylate type Cu2(RCOO)4 unit.

Level of Heavy Metals in Females with Breast Cancer

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Heavy metals like chromium, lead and cadmium are carcinogenic and non biodegradable in nature. High levels of these heavy metals were determined in the blood of female patients in malwa region of Punjab using inductive coupled plasma- Atomic emission Spectrophotometer (ICP-AES). Female patients were divided into study group (females having malignant breast lump) and control group (females having benign breast lump). Females of age group 20 - 60 y were included in this study.The present study shows high levels of these metals in study group in comparison to control group. Concentrations of these heavy metals in blood were found to be significantly higher ($p<0.01$). This study highlights the role of chromium, lead and cadmium in the possible cause of breast cancer.

Organic Waste Management : A Novel Approach to Managing Waste

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A waste can be defined as any unwanted and useless material that is generated due to various activities viz., residual, commercial, agricultural etc. The management of wastes assumes importance in view of the serious and damaging environmental hazards that they pose.

Composting and vermicomposting are sustainable strategies to transform organic wastes into organic amendments. Organic waste is the type of waste which can be easily biodegradable waste including agricultural waste, market waste, kitchen waste, urban and municipal solid waste. Thus, composting is one low cost alternative solution to overcome this

problem. It refers to the bio-oxidative process involving mineralization, humification of organic matter leading to a stabilized final product, free of phytotoxicity and pathogens with certain humic properties too. However, the negative aspects of these processes are inclusive of emission of greenhouse gases, odorous molecules and final products which are potentially containing toxic compounds which pose danger to the surrounding environment.

A limit can be imposed on such negative aspects through addition of various selective additives (organic and biological) to the composted mixture as some additives have contrasting effects on the quality of final product and its impact on soil quality. Natural composting may require 4-5 months depending upon the amount and kind of waste but the process can be made to accelerate by optimizing the composting parameters such as pH, moisture, aeration, C:N ratio (browns and greens) i.e., 25:1. Moreover, waste must be shredded into smaller particles so as to increase the surface area and need to be turned over at regular intervals. The microbial community in compost which are bacteria, fungi, and worms are responsible for appropriate degradation. Therefore, inoculation of waste with microorganisms that produce extracellular enzymes such as cellulose, lipase, etc. at higher levels enhance degradation rate to that of waste dumping. Co-composting and co-vermicomposting need to be locally optimized, involving the general amendments in a circular economy to improve sustainability of agricultural systems.

Correlation Between Dietary Protein Intake And Hypertension Among Females Age Ranging From 25-30

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Our contemporary/fast paced life style resulted in more inclination towards fast food culture, instant diet food and increased public interest in weight control/ led to many physical, psychological and mental health problems among males and females. Diet and lifestyle play important role in etiology of cardiovascular problems especially hypertension (HTN). Dietary protein intake and prevalence of hypertension has been the major cause of concern among the general population and particularly among the child bearing women health all over the world. Previous studies have revealed that more than one third of the middle aged women are suffering from high blood pressure. The higher prevalence of HTN in women as compared to than in men has given us insight to carry out research to establish a link between the dietary protein intake of young Punjabi women of child bearing age and their blood pressure. The findings can help government to implement policies for the improvement and betterment of mother and child health in Punjab.

Recent advances in synthesis of medicinally important dihydropyrimidines

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In this presentation we will discuss about the importance of DHPs.DHPs are important nitrogen containing heterocyclic compounds that can be synthesized by BIGINELLI REACTION.It is a cyclocondensation of beta keto ester,an aldehyde and urea using acid catalysis to give DHP & was firstly reported by Pietro Biginelli.They show wide range of medicinal properties such as antiviral,anticancer,inhibitors of calcium channel,anti-inflammatory &antioxidant agents & demonstrated to be promising in photophysical properties.In recent years no. of new methods has been reported in literature for these synthesis.In this brief review we will discuss various medicinally important DHPs &their new methods of synthesis.

Cellulose acetate-zirconium (IV) phosphoborate nano-composite with enhanced photo-catalytic activity

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In the present investigation, Poly-o-toluidine zirconium phosphoborate (CA-ZrPB) nanocomposite has been prepared by sol-gel method. The various claims made in the experimental observations with respect to nanocomposite exchanger were established by XRD, EDX, SEM and TEM. Ion exchange capacity, pH titration, elution concentration, elution behaviour, thermal stability and distribution coefficient were investigated to explore ion exchange behaviour of CA-ZrPB. The nanocomposite showed an ion-exchange capacity of 0.70 mequiv g 1 for Na+ and was highly selective for Ni (II) and Zn(II) over many other metal ions. The photocatalytic activity of the CA-ZrPB was explored for degradation of a methylene blue dye from aqueous phase. 92% of dye was removed in 60 min of irradiation. Simultaneous adsorption and photocatalysis had synergetic effect on dye degradation.

Study of Macrocyclic complexes: Applications & Methodology

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Macrocyclic ligands are cyclic molecules with three or more potential donor atoms in a heteroatomic ring of at least nine atoms. Synthetically developed macrocycles such as phthalocyanin, gadodamide complexes mimics some naturally occurring macrocyclic rings and have various applications such as MRI contrasting agents and dye stuff. Polyazamacrocycle has fascinated an extensive significance in current times due to their capability of interacting with both ions like anion and cation and their wide applicability as ion sensors. So, the study has emphasized on the various template and non-template mediated synthesis of macrocyclic ligands and complexes from 2014-2019 and their enormous applications in pharmaceuticals.
Keywords: Macrocycle, template, non-template, anti-fertility, applications.

Hospital waste and its impact on environment

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No society can survive in absence of the health care institutions. It's a common observation that there is increase in number of healthcare institutions as there is exponential growth in number of patients as well. As the result of diagnosis and treatment in the hospitals, large number of waste is being generated. According to the Associated Chambers of Commerce and Industry of India (ASSOCHAM), India is likely to produce 7775.5 tonnes of medical waste per day by 2022from the current production of 550.09 tonnes daily. Such a huge generation, need to be managed by efficient and effective management strategies. Improper management raises threat to health and environment. The government of India has already issued new guidelines through various amendments in the biomedical waste management regulation which come in the form of a guide book. Improper segmentation and disposal of biomedical waste on ground which act as source of infection for insects, animals and human. It may contaminate groundwater and infection may travels through air. Such infection may cause lunges infection, parasitic infections, bacterial infection, Cholera, Tuberculosis, etc. Now its responsibility of very hospital administrator to make arrangements

to equipped the staff with adequate knowledge and training to handling of biomedical waste in more efficient and safe manner. Every hospital should have proper equipments and tools to handle the hospitals waste with care. Particularly in case of government hospitals where apposite of manpower and funds reported as major reason of low level handling of biomedical waste. The present study is exploratory in nature and reveals various unhidden issues related to handling of the biomedical waste in Punjab. The study critically analysed various previous studies and reports issues by the various agencies regarding biomedical waste management in Punjab. It is concluded that despite the fact government has issues various guideline to handle the biomedical waste, butmany cases still are being reported regarding misconduct of segregation of waste, open burning and dumping of waste in public domain. The study emphasises the need of awareness programmes about various threat of improper management of biomedical hospital waste among the medical staff including fourth class.

Aggregation behaviour study of long-chain imidazolium based ionic liquids in aqueous medium

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Self-association of long-chain imidazolium ionic liquids (ILs); C10mimBr C12mimBr, C14mimBr and C16mimBr in aqueous solution was studied by conductivity measurements at different temperatures. The break points appeared in specific conductivity (?) vs concentration (c) plot indicates that the molecular aggregates, i.e., micelles, are formed in aqueous solutions of these IL species. From the conductivity data, the critical micellar concentration (CMC) and thermodynamic parameters of micellization (Gibbs free energy of micellization, ? Gom; enthalpy of micellization, ?Hom and entropy of micellization, ?Som) have also been computed.

Investigation of the solute - solute and solvent - solvent interactions in ternary {amino acids +ionic liquids + water} mixtures at different temperature

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The densities of ternary mixture of ionic liquid + water + amino acid have been measured at temperature range from 288.15 K to 308.15 K at the interval of 5K and at atmospheric pressure. These data have been used to calculate the parameter like apparent molar volume, the partial molar volume and standard partial molar volume of transfer. All of these parameters were used to interpret the effect of aqueous ionic liquids on the amino acid and solute?solvent interactions occurring between the various components.

Influence of imidazolium based ionic liquid on the micellization behavior of anionic surfactant in aqueous medium

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Imidazolium based ionic liquid 1-propyl-3-methylimidazolium bromide [C3mim][Br] has been synthesized in laboratory and the 1H- NMR and FT-IR spectroscopic techniques have been employed to characterize the synthesized ionic liquid. The aggregation behaviour of mixed system of 1-propyl-3-methylimidazolium bromide [C3mim][Br] and sodium hexadecyl sulfate have been investigated by utilizing electrical conductivity at different concentrations (0.02, 0.05 and 0.1) wt. %, of ILs in aqueous medium at temperatures 298.15K, 303.15K and 308.15K. In order to validate the CMC values obtained from conductivity measurements, fluorescence and UV-Visible spectroscopy has been utilized to obtain CMC value.

An Investigation on Drug Binding Ability of imidazolium based Surface Active Ionic Liquid at various temperature and concentration

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The micellization behavior of surface active ionic liquid (SAIL) 1-tetradecyl-3-methylimidazolium chloride, [C14mim][Br] with an amphiphilic drug amitriptyline hydrochloride (AMT) and metformin hydrochloride have been studied using using multiple techniques, including conductometric titration. Conductivity measurements have been employed to calculate Critical micelle concentration (cmc), and various thermodynamic parameters like standard free energy of micellization, standard enthalpy of micellization and standard entropy of micellization.

Volumetric study of citrate salts in aqueous imidazolium based ionic liquid solution at different concentrations and temperatures

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Systematic study on the volumetric properties of citrate salts (TLC, TAC, TKC and TAC) in (0.005, 0.01, 0.03 and 0.05) mol?kg-1 aqueous solution of ionic liquid [C4mim][BF4] at different temperatures and experimental pressure p = 0.1 MPa, are done to understand the intermolecular interactions there in the system. We have utilized the experimental data of density determining the apparent molar and partial molar parameters concerning volumetric properties at the investigated temperatures. The results have been discussed in terms of interactions existing among solute and solvent.

Methyl Red Functionalized Amidopropylsilatranes : Syntheses and Characterization

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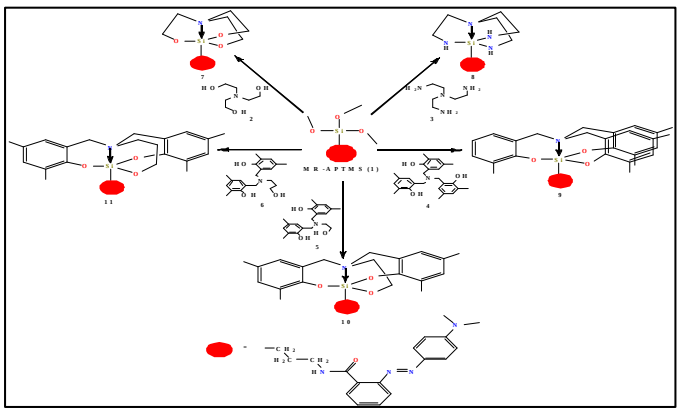
Five new amidopropylsilatranes (7-11) with o-methyl red functionalization at ?-position of propyl chain have been synthesized. The syntheses have been carried out by transesterification reaction of methyl red-amidopropyltrimethoxysilane 1 (MR-APTMS) with various tetradentate ligands including both symmetric (2-4) and asymmetric (5,6) tetradentate ligands. The silane 1 i.e. MR-APTMS itself was synthesized by one-pot reaction of ?-aminopropyltrimethoxysilane (APTMS) and o-methyl red dye (MR), employing coupling reagent N,N'-carbonyldiimidazole (CDI). All the synthesized compounds have been characterized by elemental analyses, multinuclei NMR (1H and 13C), FTIR, UV-vis studies, mass spectrometry and single crystal X-ray diffraction analysis in the case of 7.



Synthesis, in vitro Anticancer and Antimicrobial Evaluation of Novel Substituted Dihydropyrimidines

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A series of 1,4-dihydropyrimidine derivatives 3(a-t) were prepared from Biginelli reactions by using ethyl acetoacetate, substituted benzaldehyde and thiourea in the presence of piperidine and ethanol. The compounds 3(a-t) were reacted with dimethylsulphate, diethylsulphate, butyl bromide and benzyl chloride to give the new series of compounds 4(a-t). The structures of the newly synthesized compounds 4(a-t) were established by IR, 1H NMR, Mass spectra and elemental analysis. The synthesized compounds were evaluated for their in vitro anticancer activity by using Sulforhodamine B assay method against the growth of four humans cancer cell lines, antibacterial activity against Staphylococcus aureus, Bacillus subtilis, Pseudomonas aeruginosa, Escherichia coli and for antifungal activity against Candida albicans and Aspergillus niger. The compounds exhibited good anticancer activity and moderate antibacterial and antifungal activities. Compounds 4b, 4c, 4d, 4g, 4i, 4n, 4o, 4q and 4s showed significant anticancer activity when compared with the doxorubicin as a standard reference drug.

Key words: Anticancer, antimicrobial, Biginelli reaction, cell line, dihydropyrimidine, SRB assay method

Synthesis and surface modification of nanoparticles Iron Oxide nanoparticles with Silica for adsorption of toxic pollutants

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In recent years, many novel nano materials with distinct structures have emerged as a result of intense research efforts by many groups. Among them, iron-based magnetic nano materials have been aroused the interest that are stable, easily synthesized, possess a high surface area and could be facile-separated via magnetic forces, and are of low toxicity and costs. These are successfully adapted to many applications in a wide range of fields such as catalysis, biotechnology, magnetic resonance imaging, biosensors, food security, biomedical,

and pollutant remediation. Numerous chemical methods can be used to synthesize magnetic nanoparticles as microemulsions, sonochemical synthesis, hydrothermal synthesis, flow injection syntheses, co-precipitation, solvothermal and electrospray synthesis. We followed the co-precipitation technique because it is the simplest and most efficient synthetic pathway to obtain magnetic particles. The synthesis (to produce more compatibability in biosystems, proper functionalization, and molecular conjugation), surface modification of iron oxide is very important. In order to provide stability and binding of new ligands with iron nanoparticles coated by sol-gel method with silica inorganic material because Silica coatings have several advantages due to stability under aqueous conditions even if the pH value is sufficiently low, easy surface modification, prevent agglomeration and easy control of interparticle interactions, both in solution and within structure. To identify synthesis of iron nanoparticles and silica coated characterized with UV-Vis spectra, Fourier transform infrared spectroscopy and Transmission electron microscopy.

Truths of today's water purification system

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Water is unquestionably pivotal for long term health as human body is about 60% of water. It is convinced by some researchers that "water might be the most important 'nutrient' for cancer prevention." But water nowadays is heavily contaminated by pollutants such as pesticides, effluents from various industries, sewage systems, hospitals, refineries etc. Although various water purification systems are established but they don't work well as they use water filters which solely purifies water while appropriate use of water filters and water purifiers provides upto 90-95% purity. Moving towards bottled water system, it is just high priced tap water (full of contaminants) packed in plastic bottles which is merely responsible for environmental pollution. To tackle with all these conditions, domestic water purification systems should be designed in such manners that they should remove heavy metal ions like lead, copper, chlorine and chlorine by-products such as THMs which is cancer causing agent. Water purification system such as chlorine filters, RO removes only minor contaminants but not removes heavy metal ions such as lead, toxins and THMS etc. Considering all this some new researches should be assigned for domestic water purification system such as 'Nano porous membranes and fabrication systems.

References:
1. Truths About Drinking Water: What you Need to Know to be safe- Food Revolution Network (https://foodrevolution.org)
2. Water Filtration vs. Purification- Get the Facts! (https://blog.radiantlifecatalog.com)
3. Recent Advances in Nanoporous Membranes for Water Purification (Zhuqing Wang, Aiguo Wu, Lucio Colombi Ciacchi and Gang Wei)

Solvation characteristics of tetraalkylammonium salts investigated conductometrically and viscometrically in methanol and dimethylsulfoxide mixtures

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Molar conductance and viscosity of some tetraalkylammonium perchlorate salts (R4NClO4 where R = Methyl, Ethyl, Propyl, Butyl) were measured in the concentration range (30-500)×10-4 mol kg-1 at 298.15 K in the binary mixtures of methanol (MeOH) and dimethylsulfoxide (DMSO) binary mixtures containing 0, 20, 40, 50, 60, 80 and 100 mol% MeOH in DMSO. Viscosity data was analyzed using Jones-Dole equation and the conductance data was analyzed using Shedlovsky equation. The A and B coefficients of the Jones-Dole equation were positive for all salts. The A-coefficients are in reasonably good agreement with the limiting theoretical values (A?) calculated using Falkenhagen-Vernon equation. The limiting ionic conductances (?o±) were used to evaluate the solvated radii (ri) of the ions. The variation of ionic B± coefficients as well as the actual solvated radii (ri) with solvent composition in DMSO+MeOH mixtures shows the preferential solvation of tetraalkylammonium ions by DMSO-rich region of the mixtures. The extent of solvation of tetraalkylammonium ions was found to decrease with increase in size of the ions attributed to solvophobic interactions of the bulkier ions with the solvent molecules. The solvation exhibited by the perchlorate ion was weak at all compositions of the mixtures.

Fluorescence determination of Hg(II) ion using 1,8-naphthalimide based hybrid nanoassembly

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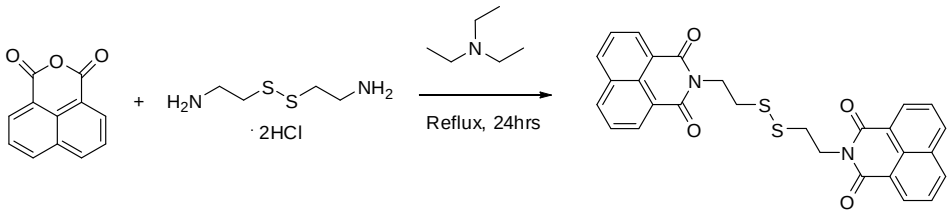
1,8-naphthalic anhydride and cystamine dihydrochloride have been used as precursors for the synthesis of a dipodal compound (1) which has been further processed into fluorescent organic nanoparticles (N1) by re-precipitation technique. This has resulted in the formation of spherical nanoparticles which have been characterized by TEM and DLS studies. These hybrid nanoassemby composed of organic and inorganic nanoparticles have been used as a sensing platform for determination of mercury (II). The sensing phenomenon shows a ratiometric response for the selective determination with Hg2+ ion among other heavy metal ions with enhancement in fluorescence emission at 340 nm and decrease in emission intensity at 469 nm. Other heavy metals showed no interference towards recognition of Hg2+ ion.



Compound **1**

Synthesis of some chalcone derivatives and to study their antibacterial activities

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Department of Chemistry, M M Modi College, Patiala -147002

Some new chalcone derivatives based on phenazines were synthesized by reaction between o-phenylenediamine and ninhydrin in glacial acetic acid. The carbonyl group was utilized to synthesize chalcone derivatives by its reaction with ketones followed by dehydrarion reaction under acidic conditions. The antibacterial activity of these compounds will be evalutated.

Selective Recognition Of Lithium Ions Using Organic Nanoparticles Of Biginelli Derivative

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Assessing recognition properties of organic nanoparticles is a rigorous area of research in the field of sensor development. In the current work, a Biginelli-derivative has been synthesized using a one-pot-multicomponent cyclocondensation reaction. The sensing platform of organic nanoparticles of Biginelli derivative was generated by employing the re-precipitation method. The synthesized organic nanoparticles were characterized using TEM, DLS and photophysical studies for investigating their size, shapes, effect of solvent change and varying pH.. These optimized organic nanoparticles were then engineered into efficient sensors for the selective detection of biologically and environmentally relevant lithium ions with superb selectivity in pure aqueous medium. It was proposed that the addition of varying components in the Biginelli scaffold would influence the binding ability of the organic nanoparticles towards different analytes. Moreover, the fast response, nanomolar limit of detection and competitive experiments established the effectiveness of the developed organic nanoparticle based-sensor system for practical applications. The real-time experiment illustrated the applicability of the proposed naoprobe in real samples which projects the effective development of the sensor system into potential hands-on sensing scheme.

Physicochemical Properties of Organic-Organic Binary Eutectic Mixtures

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A Eutectic System is a homogenous mixture of substances that melts or solidifies at a single temperature that is lower than the melting point of either of the constituents. The eutectic temperature is the lowest possible melting temperature overall of the mixing ratios for the involved component species. Eutectic point is an important property in any process where melting or freezing of two component system occurs. From the eutectic compositions and temperatures we can determine the phase compositions and phase crystal structure

which is important in industrial processes. In the present attempt we have determined the eutectic point of various (organic-organic) eutectic mixtures viz. acetamide-benzoic acid, naphthalene-diphenylamine, naphthalene-benzoic acid, and benzoic acid-cinnamic acid. The observed eutectic temperatures for the eutectic mixtures acetamide-benzoic acid ,naphthalene-diphenylamine, naphthalene-benzoic acid , benzoic acid-cinnamic acid have been found to be - 66.67 °C, -50.6 °C, 65.0°C and -95.0°C respectively. Eutectic composition and Eutectic percentage ratio has also been reported using Phase diagram. The other physicochemical, crystalline and thermodynamic properties of the binary organic-organic binary eutectics under consideration are under progress.

Keywords: Eutectic point, Eutectic mixture

Apparent molal volumes and Partial molar volumes of biologically important compounds

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A partial molar property is a thermodynamic quantity which indicates how an extensive property of a solution or mixture varies with changes in molal composition of the mixture at constant temperature and pressure. The partial molar volume is one such property which gives useful information about the various types of interactions. In the present attempt, apparent molal volume and partial molal volumes of aqueous solutions of four biologically important compounds or amino acids viz. glycine, asparagine, aspartic acid and tryptophan of different molalities (0.1-1.0 mol kg-1) at three different temperatures (298K, 308K and 318K) have been determined. For density measurements, Sprengel and Ostwald pyknometer has been used. The partial molal volumes at infinite dilution have been obtained using Masson equation. These values are positive for all compounds except glycine and apparent molal volume decrease with increase in molal concentration of compounds. The partial molal volumes for the compounds glycine, asparagine, aspartic acid and tryptophan have been calculated to be -523.5, 172, 71.7 and 146.5 respectively. These results indicate that the above solutes mix ideally with water and there is a perfect solvation of these molecules resulting into the absence of the solute-solute interactions and presence of strong solute-solvent interactions. The values of partial molar volume are positive and large for all the solutes in various molal mixtures of water at higher temperature, showing the presence of very strong solute - solvent interactions. The evaluation of apparent partial molal volumes, partial molar values of other biologically important molecules in water and other various solvents is under investigation.

Keywords: Apparent molal volume, partial molar volume, Masson Equation.

3-Substituted Formazans as potential naked eye Colorimetric Chemical Sensors

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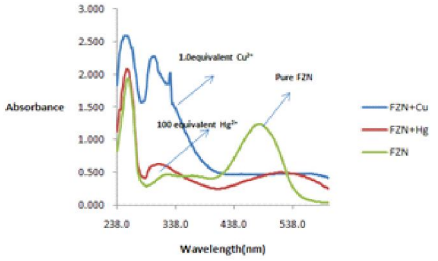
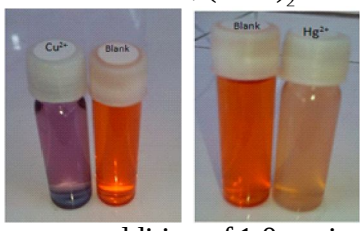
Formazans are the water-insoluble, colored azo-hydrazone compounds containing the characteristic chain of atoms in the molecule.

$$— N^1 = N^2 — \underset{|}{C}^3 = N^4 — \underset{|}{N}^5 —$$
$$\qquad\qquad\qquad\quad H$$

Most commonly 1, 5-substituents are aryl or heteroaryl groups. The 3-position or the meso position can be occupied by a variety of substrates (e.g. aryl, heteroaryl, H, -OH, -SR, halogen, $-NO_2$, -CN and alkyl). In the present attempt a differently substituted series of synthesized and characterized 3-cyano-1,5-diarylformazans and 3-nitro-1,5-diarylformazans have been investigated for their colorimetric response towards metal ions Na^+, K^+, Ba^{2+}, Cu^{2+}, Pb^{2+},Ni^{2+}, Co^{2+}, Zn^{2+}, Ag^{1+}, Cd^{2+}, Mn^{2+}, Sr^{2+}, Fe^{2+}, Al^{3+} and Hg^{+2} in THF-water (2:3 v/v) using 10mM borate buffer and cetylpyridinium chloride (CPC) as surfactant. It has been found that transition metal ions particularly Hg^{+2} and Cu^{+2} respond very well in aqueous solutions between pH 9-10 to the compounds under study.



UV-visible spectrum of the blank, $(FZN)_2$-Cu^{2+} and $(FZN)_2$-Hg^{2+}



3-cyano-1,5-di-p-anisylformazan on addition of 1.0 equiv. of Cu^{2+} aqueous solution and 3-cyano-1,5-di-p-anisylformazan on addition of 100 equiv. of Hg^{2+} aqueous solution

Medicinal impiortance of diverse 1,2,3-triazole moiety : A brief review

Amandeep Sharma, Geetesh, Harwinder Singh

PG Department of Chemistry Multani Mal Modi College Patiala

The development of 1,2,3-triazoles for drug discovery and industrial use has been shown to be very versatile. The uses for triazoles have been found in various areas and are continuously growing. The applications of these triazoles are increasingly found in all aspects of drug discovery, ranging from cutting edge research through combinatorial chemistry and target-templated in situ chemistry, to proteomics and DNA research using bioconjugation reactions. These triazole products are more than just passive linkers; they readily associate with biological targets, through hydrogen bonding and dipole interactions. Derivatives of 1,2,3-triazole have been found to have anti-HIV, anti-fungal, anti-allergenic, anti-cancer, anti-malarial, anti-bacterial, cytostatic, antituberculosis, biostatic, and anti-inflammatory activities. Triazoles are particularly interesting for medicinal use because of being non-toxic, they are more likely to be water soluble than normal aromatic compounds, and are stable in biological systems. On the industrial side, 1,2,3-triazoles are found in hydraulic fluids, agrochemicals (fungicides), herbicides, light stabilizers, fluorescent whiteners, optical brightening agents, pigments and corrosion retardants. This allows for the applications of 1,2,3-triazoles to grow exponentially due to their reliability, tolerance to a wide variety of functional groups, regiospecificty and the readily available starting materials. Through this, 1,2,3-triazoles are very attractive to use and apply in many fields.

The mechanistic study of reaction between N-benzoyl carbamates and aliphatic/ aromatic amines for synthesis of substituted N-benzoyl urea derivatives: a DFT approach

Harjinder Singh

PG Department of Chemistry Multani Mal Modi College Patiala

A thorough investigation on whether a stepwise or a concerted pathway is involved in the synthesis of substituted N-benzoyl urea derivatives by reaction of substituted N-benzoylcarbamates and aliphatic/aromatic amines using density functional theory (DFT) calculations at B3LYP/6-311+?G (d,p) level of theory has been reported. The study of effects of nature of leaving group present in N-benzoylcarbamate, structure of amines, and

solvents on the reaction showed that the choice of reaction mechanism involved depends upon the nature of leaving group present on N-benzoylcarbamate. The effect of structure of amine on reaction mechanism depends upon the type of leaving group present on N-benzoylcarbamate. We have also observed that the reaction between aliphatic/aromatic amine with phenyl benzoylcarbamate is thermodynamically more favorable, while a reaction between phenyl/methyl benzoylcarbamates with methylamine is more preferred. The effect of polar solvent water and non-polar solvent toluene on reaction mechanism was also investigated to account the interactions of solvent molecules with polar transition states at the same level of theory.

Nickel Boride Mediated Chemoselective Reduction of Aryldiazonium Tetrafluoroborates to Corresponding Aryl Hydrazines and Aryl Amines at Ambient Temperature

Gaurav Bartwal, Prof. Jitender M. Khurana

Department of Chemistry, University of Delhi, Delhi-07

An efficient method has been reported for the chemoselective reduction of aryl diazonium tetrafluoroborates to corresponding hydrazines or anilines with nickel boride generated in situ from nickel chloride and sodium borohydride at room temperature using 1:1:3 or 1:2:6 molar ratio of substrate : NiCl2 : NaBH4. The aryl amines are obtained by in situ reduction of aryl hydrazines formed initially. Halo, carboxy, carboethoxy and methoxy groups remain unaffected under these conditions. Mild reaction conditions, easy work?up and chemoselectivity are major advantages of this new procedure.

An efficient green approach for the synthesis of novel triazolyl spirocyclic oxindole derivatives via one-pot five component protocol using DBU as catalyst in PEG-400

Sudesh Kumari, Harjinder Singh, Jitender M.Khurana

Department of Chemistry, University of Delhi, Delhi-07

We have described an efficient one-pot five component reaction of acetylacetone, aryl azides, aromatic aldehydes, isatin and l-proline using DBU as catalyst in PEG-400 at 80 °C for the construction of novel heterocyclic triazolyl spirocyclic oxindole derivatives. Structures of all

synthesized novel compounds have been confirmed by spectral and X-ray studies. Crystal packing of compound 6i has also been reported. Green solvent, less reaction time, easy work up and high yields are the salient features of the present protocol. The same reaction has also been reported by stepwise reactions including a one-pot three component reaction.

Doing environmental conservation and animal welfare simultaneously: a case study from Chandigarh

***Gaurav Gaur and ** Ishita Choudhary**

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We get a lot of green vegetables during the winter season in the north region of India every year. We consume them and throw away the left overs which is regarded as the wet waste without giving it a sensible thought. Considering, the huge chunk of such left over peels of these raw vegetables in the hostels of our University forced us to do something with them. With a group of students, we started collecting such raw, unused vegetables from the hostels everyday and transporting them to a nearby cow shelter home. We used to collect almost 150kg to 600kg of such vegetables everyday. There were two objectives for doing the same which included clearing the unwanted wet waste from the campus and converting the waste to wealth in the form of food for the cows and bulls.

A Review On Biological Activity Of Quinazolinones

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Quinazolinones is considered is considered as an important chemical synthesis of various physiological significance and pharmacological utility. Quinazolinones are a large class of active chemical compounds exhibiting a broad spectram of biological activities in the animals as well as in humans. Lierature studies on the Quinazolinones have shown that these derivatives possess a wide variety of biological activities such as anti HIV, anti cancer, antifungal, antibacterial, antimutagenic,anticoccidial, anticonvulsant, anti-inflammatory, CNS depressant, antimalerial, antileukemic activity,antileishmanial activity. The review focused on the biological activities of Quinazolinones.

Keywords- Quinazolinones, antimutagenic, antileukemic, antileishmanial

The chemistry of the Universe (Helium-3)

Haranpreet Kaur, Jyoti Garg, Manisha, Savita Singh

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Helium-3 is a light non-radioactive isotope of Helium with 2 protons and one neutron. It is rare on earth and used for in nucelear fusion research. The abdunace of helium 3 is greatest on moon. Reserachers estimate that 25 tons of Helium-3 could power the United States for enire yeaer. The moon could meet the enrgy for world for the next 10,000 years. Helium-3 is naturally produced through fudion in sun. It would produce pollution freee energy.

Bio removal of nickel released from electroplating industry using pineapple peel powder

Rupinder Sharma[1], Manjit Kaur[2], Mintu Tyagi[3]

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Nickel has been designated as priority pollutant by the US environmental protection agency. Due to its ability to cause mutations and cancer in humans. Electoplating industry which commonly use nickel discharges the effluents in the environment in large quaunties greater than the maximum permissible limits. There are several methods reported for removal of nickel by adsorption. In this work we will present removal of nickel by environmentally important method using pineapple peel powder as adsorbent.

Bio removal of azo dyes from waste water using pineapple peel powder : A Reivew

Sanjay Gupta

Department of Chemistry, SCVB, Govt. College, Palampur

Dyes used for colouring of materials are obtained from different sources. They can be natural or synthetic. Vegetables and animal sources of dyes are known since long. It is a well known fact that the aqueous solution of organic compound imparts their colour to the materials. Dyes are classified based upon their chemical constition or their application to fibers. Certain groups of dyes are dependent on each other according to their chemical behavior and method used for dyeing.

Azo dyes, the largest group of dyes , have N=N- chromophore in an aromatic system. Azo dyes can be classified into various tyoes such as monozo, diazo, trisazo , tetrakisazo and polyazo according to the number of azo grorup . Presence of HCl and $NaNO_2$ at freezing temperature leads to diazotization of a primary amine, producing a diazonum salt that couple with aromatic compound , giving an azo-dye.Azo pigments are colourless particles (typically earths or clays),which have been colored using an azo compound.

Azo dyes has been designated as priority pollutant by the US envirnmoental protection agency due to its ability to cause mutations and cancer in humans.

In the present study an attempt has been made to investigate the use of low-cost pineapple peels powder for the adsorption of azodyes from waste water and provide insight into the mechanism of adsorption process

Synthesis and characterization of some novel 1,3,5-triaryl formazones.

Sudha Sharma

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Some novel differently substituted 1,3,5-formazans have been synthesized by reacting benzal aldehyde and phenyl hydrazones with substited aromatic amines in the presence of pyridine as base in cold. The synthesised bright red coloured compounds were purified and recrystallised from chloroform hexane mixtures and have been characterized by UV, IR and ^{1}HNMR and mass spectral data. These studies 1,3,5-formazans are intra molecularly hydrogen bounded and contians six membered ring.

Methylene blue dye removal from Industrial Effluents using low cost bio adsorbent : A Review

Lovepreet Singh[1] and Jagjit Singh[2]

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[1]Department of Chemistry, M.M. Modi College, Patiala

Methylene blue is a dye commonly used in textile in rubber plastic and food industry etc. The discharge from industry contains dye which impart color which are visible by naked eyes and cause many problems with increase in toxicity. Through various chemical and physical methods have been employed for color removal from industry. The adsorption is most effective method. In present review a attempt has been made to summarise the literature containing the use of low-cost bio - adsorbents for the removal of residues methylene blue dye from waste water.

Iron Nanoparticles as Potential MRI Contrast Agents

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MRI contrast agents are used to improve the visibility of internal body structure in magnetic resonance imaging. Gadolinium containing MRI contrast agents(gado, gad) having a high longitudinal relaxivity r1 and are used to increase the contrast in the image. The relaxivity r is defined as the ratio of the inverse relaxation time and the concentration of the contrast agents. Iron oxide particles have been largely used as negative (dark) contrast agents,

but radiologists vastly prefer positive (light) contrast agents such as gadolinium-based agents. But while the gadolinium-based agents have become the standard, evidence shows that in some cases they can lead to an untreatable condition called nephrogenic systemic fibrosis, which can be fatal. In addition, evidence now shows that the gadolinium can build up in the brain, and although no effects of this buildup have yet been demonstrated, the FDA is investigating it potential harmful effects. The combination of a very tiny iron oxide core and an ultrathin ligand shell leads to a total hydrodynamic diameter of 4.7 nm, below 5.5-nm renal clearance threshold. This means that the coated iron oxide should quickly clear through the kidneys and do not tend to accumulate. The diagnostic and therapeutic advantages of magnetic nanoparticles stem from the static and dynamic magnetism of the nanoparticles along with the ability to impart cell-specific functionality. Biocompatibility of such nanomaterials allows for in vivo applications in animals and humans. Currently, various formulations of IONPs have been developed for drug-delivery schemes,magnetic cell separation and cell targeting. Compared with the gadolinium-based contrast agents, Magnetic Iron Oxide Nanoparticles(MION)-based contrast agents have superior biocompatibility and safety profiles because iron is an essential element in the human body, but gadolinium is not.

Biological activies of Phenazines derivatives

Nikita, Anshu Garg, Garima, Shreya, Mansi

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Phenazines are nitrogen containing heterocyclic compounds with versatile biological and medicinal properties depending on various function groups present. They modify celluer redox stae in plants. They also influence growth induced systemeatic resitance. They are known to show antibacterial, anti cancer and anti HIV properties. The details will be discussed.

Thermoluminescence Studies of Magnesium Aluminate Nanoparticles

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Nowadays, researchers are highly focused towards spinels due to their excellent structural, optical and electrical properties that lead to its wide range of applications in various fields [1-3]. Magnesium aluminate (MgAl2O4) spinel is a wide band gap material with high melting point, electrical resistivity, hardness, good mechanical strength and high resistance against chemical attack [3-5]. In this work, thermoluminescence (TL) response of MgAl2O4 nanoparticles is studied as a function of radiation dose. Solution combustion method is employed for the synthesis of MgAl2O4 using monoethanolamine as a fuel. X-ray diffraction pattern of the nanoparticles revealed the formation of single phase cubic structure with space group Fd3m. The annealed nanoparticles are irradiated by 60Co ?-ray radiation source at different radiation doses. TL glow curve consists of deep trap at low radiation doses and a low temperature features seems to merge with the high temperature peak with increasing radiation dose that can be correlated to various defect centers. Various trapping parameters viz. activation energy, frequency factor and order of kinetics are calculated from the TL glow curves.

Fabrication and characterization of $Ge_2Sb_2Te_5$ thin Film

Kamaljit Singh[1, 2]*, Palwinder Singh[3] and Anup Thakur[1]

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Chalcogenide based phase change materials (PCMs) exhibit amorphous polycrystalline structural transition, accompanied by a drastic change in optical and electrical

properties, on the nanosecond timescale, makes them central candidate for various technological applications. Ge2Sb2Te5 (GST) is one of the best PCM among other because of its splendid set of properties. Phase transition in GST can be achieved by applying a variety of ways, such as laser pulses, voltage pulses, local heating, and pressure. Presently, GST is a potential candidate for resistive switching, phase change random access memory (PCRAM), optical data storage, active lattice tuning photonic components, and IR-reversible window [1-6].

In the present study, GST bulk alloy were prepared from high pure (99.999%) Ge, Sb and Te elements using melt quenching technique [7]. Composition of prepared bulk sample was verified using energy dispersive X-ray spectroscopy and found to be comparable with starting stoichiometry. Thin films of prepared alloy were deposited on glass substrate using thermal evaporation technique under high vacuum better than 10-5 mbar [7]. Thickness of thin films was determined in-situ using digital thickness monitor (DTM-101). Deposited thin films were annealed in vacuum. Structural properties of as-deposited thin films and annealed were verified using X-ray diffraction. Optical properties were studied from transmission spectra.

References:

I. Hilmi, A. Lotnyk, J. W. Gerlach, P. Schumacher, and B. Rauschenbach, APL Mater. 5(5), 050701 (2017).

Y. Liu, M. M. Aziz, A. Shalini, C. D. Wright, and R. J. Hicken, J. Appl. Phys. 112(12), 123526 (2012).

Y. Chen, X. Li, Y. Sonnefraud, A. I. Fern andez, D. Om ?nguez, X. Luo, M. Hong, and S. A. Maier, Sci. Rep. 5, 8660 (2015).

Q. Wang, E. T. F. Rogers, B. Gholipour, C. M. Wang, G. Yuan, J. Teng, and N. I. Zheludev, Nat. Photonics 10, 60-65 (2016).

P. Singh, A.P. Singh, N. Kanda, M. Mishra, G. Gupta, and A.Thakur, Appl. Phys. Lett. 111, 261102 (2017).

P. Singh, A.P. Singh, J. Sharma, A. Kumar, M. Mishra, G. Gupta, and A.Thakur, Phys, Rev. Appl. 10, 054070 (2018).

P. Singh, P. Sharma, V. Sharma, and A. Thakur, Semicond. Sci. Technol. 32, 045015 (2017).

Synthesis ,Characterization and Evaluation of Antibacterial Activity of 1H-pyrazolo[3,4-b]pyridine carboxylate Derivatives

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Pyrazole and pyridines belong to the class of nitrogenous heterocycles characterized by five membered and six membered heterocyclic ring respectively, which play an essential role in the medicinal chemistry. Pyrazolopyridines are nitrogen containing 10-? aromatic bicylic heterocycles, and have biological activities such as antimicrobial, antiviral, anti-HIV, antibacterial etc. Inspired by literature, the reaction of ethyl acetoacetate, phenyl hydrazine, aldehyde, and ammonium acetate in ethanol in the presence of p-TSA under refluxed conditions was done. The structure of synthesized pyrazolo-pyridine derivatives were confirmed by their spectral analysis.

Ionic Liquid Mediated Imino Diels-Alder Reaction to Synthesize Furo[3,2-c]quinoline

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Tetrahydroquinoline derivatives are an important class of natural products and exhibit biological activities in various fields. The aza-Diels-Alder reaction between N-arylimines and nucleophilic olefins is probably one of the most powerful synthetic tools for constructing N-containing six-membered heterocyclic compounds. Added to it, furanoquinolines derivatives are used as potential pharmaceuticals. For such reactions, not only effective catalysts but also simple and convenient procedures are needed. Here, we describe efficient one pot aza diels-alder reaction of imine formed insitu from aniline and aldehyde and dihydrofuran catalyzed by ionic liquid [Dsim]HSO4 in alcohol.

Synthesis of Pyrazole Based Pyrido[2,3-d]pyrimidine-5,7-Dione derivatives and Biological Applications

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Synthetic chemistry deals with the various types of heterocyclic compounds which are present in most of the drugs and play crucial role not only biologically but also industrially. Heterocycles containing pyrimidine moiety are of great interest because they constitute an important class of natural and synthetic products, many of which show useful biological activities and clinical applications.1-2 Encouraged by literature results, a new series of pyrido[2,3-d]pyrimidine has been successfully prepared by reaction of 1-phenyl-3-methyl-pyrazole-5-one, barbituric acid, aldehyde and ammonium acetate in ethanol under refluxed conditions. The synthesized compounds show in vitro antibacterial activity much better against Escherichia coli rather than Bacillus Licheniformis. Structure of Pyrido[2,3-d][yrimidine-5,7-Dione derivatives have been confirmed by their spectral analysis.

Keywords :- Pyrimidine, Escherichia coli, Bacillus Licheniformis, hetrocycle, barbituric acid

Refernces -

D. J. Brown, Comprehensive Heterocyclic Chemistry, vol. 14, Pergamon Press, Oxford, UK, 1984, edited by A. R. Katritzky and C. W. Rees.

R. C. Elderfield, Heterocyclic Compounds, vol. 6, John Wiley & Sons, New York, NY, USA, 1957.

Synthesis, Characterization, and Evaluation of Antibacterial Activity of 4H-Pyran-3-carbonitrile Derivatives

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Pyran is a six membered heterocyclic compound consisting of five carbon atoms, one oxygen, and contains two double bonds. The importance of pyran based molecules is that these are used as coloring molecules, and also as drugs. Added to it, their general propensity towards biological activity made the reasons for the extensive studies of these

molecules. Pyran heterocycles are associated with various biological, therapeutic, and pharmaceutical activities. Here, we synthesized 4H-pyran-3-carbonitrile derivative via reaction of the mixture of arylidene acetophenone with malononitrile in methanol under the reflux conditions. Moreover, these synthesized compounds are found to be potent against Escherichia Coli and Staphylococcus aureus.

Synthesis of 1,4-Dihydropyiridine-3-Carbonitrile derivatives: Characterization and Evaluation of Antibacterial Activities

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The six membered hetrocycles particularly pyridine and fused pyridines are well known naturally occurring heterocyclic compounds with remarkable pharmacological and biological efficiency. Among the various pyridine derivatives,1,4-Dihydropyridine derivatives are of interest because of their potential biological activity, such as vasodilators, antihypertensive, anti-inflammatory, antihypoxic and anti-ischemic agents and also as calcium channel modulators of the nifedipine type. Novel diverse 1,4-dihydropyridine analogues can be prepared from three components condensation method. In continuation of our research of 1,4-Dihydropyridine, here we describe general and efficient synthesis of 1,4-Dihydropyridine derivatives. The entitled compounds were synthesized via multicomponent reaction of aldehyde, acetophenone and malononitrile under refluxing conditions. The structures of desired compounds were confirmed on the basis of spectral analysis, and the synthesized compounds are found to be potent against Escherichia Coli and Staphylococcus aureus.
Keywords :- Pyridine, multicomponent, Dihydropyridine

A survey of Role and Importance of Statistical Tools in Diet Planning

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Statistics is a vast and has plenty of applications in the fields such as environmental Sciences, Diet management, Planning, biological as well as Social sciences. Statistical methods are important to detect trends, consumer preferences, explore relationships and draw conclusions from experimental data. However, many researchers apply statistical tests without first checking whether they are appropriate for the intended application. The aim of this review article is to present the important methods and applications of statistical analyses in food technology namely; basic statistics, descriptive statistics, collection of data, correlation and regression analyses, sampling plan, testing of hypothesis and non-parametric statistical techniques as well as highlighting their uses and applications are also discussed.

Phase Transition Studies of Selenium Thin Film

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In the last few years, there has been a growing interest in the interpretation of optical, morphological and structural properties of amorphous semiconductors. Amorphous Selenium is a potential candidate in various technological applications such as photonic, optoelectronic and photovoltaic etc. [1-4]. In the present study, amorphous selenium (a-Se) bulk sample was prepared by melt quenching technique. Thermal evaporation technique was used to fabricate a-Se thin films under controlled vacuum condition. After vacuum thermal annealing, phase transition from amorphous to crystalline was observed. Structural properties of as deposited and annealed thin films were verified by X-ray diffraction. Morphology of thin

films was studied by FE-SEM. Optical properties were studied from transmission spectra.

References:

B. Gates, B. Mayers, A. Grossman and Y. Xia , Adv. Matter, 14(23), 1749-1752 (2002).

X.Cao, Y. Xie and L.Li, Adv. Matter, 15(22), 1914-1917 (2003).

X. Li, Y. Li, S.Li, W. Zhou, H. Chu, W. Chen, I. L. Li and Z. Tang, Cryst. Growth Des. 5(3), 911-916 (2005).

X. Cao, Y. Xie, S. Zhang and F.Li, Adv. Matter, 6(7), 649-653 (2004).

A ploring interaction of microbiomes and sustainable plant/soil health management

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Nutrient availability and plant productivity can be increased by variety of soil factors. Among all the most influential factors are variety of organisms comprising the soil microbial community of the rhizosphere, means the soil surrounding the roots of plants where complex interactions occur between the soil, roots, and microorganisms. Root act as substrates and signaling molecules for microbes which creates a complex and interlinked relationship between the microbiome and plants. The bigger community of soil microorganisms may have more influential effects whereas individual microorganisms such as symbionts, endophytes, pathogens, rhizobacteria are ever more featured in the literature. Each microorganism plays a vital role in synchronization with the overall soil microbiome to enhance plant health and crop productivity. Most evidence shows that plants can outline the soil microbiome through the secretion of root exudates. The molecular communication alters according to the plant development stage, management techniques, proximity to neighboring species, and so many other factors.

M-Waste A Big Crisis : A Review Of Environmental And Economical Issues In E-Waste Management In India

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Exponential growth of telecommunication market in India makes the communication geographically reachable and economically affordable. India is the world's second-largest market in the world and around 1.19 billion subscribers recorded till November 2018. Technical point of view, the telecommunication can be divided into three major sectors: wireless communication, wire line communication and internet communication. The wireless communication is considered as best and cheaper service in India. Despite the fact the advancement in telecommunication provides comfortable, affordable and swift communication access to each and every corner of the earth, but on the other way creates a big environmental concern. Abundant waste is being generated in the form of old mobile, batteries, accessories and other equipment used to facilitates communications channel. Mobile waste is a big crisis and is great threat to the environment. Economic point of view mobiles are more and more cheap day by day which develop habit of changing mobile frequently among masses. As a result, the large numbers of mobiles are being dumped in the garage. Actually mobile and associated other accessories and equipment are not totally waste material. These items consist of rare metals like Gold, Silver, Platinum and high quality of aluminium. If these items recycled in proper and standardized way, a lot of recovery in terms of funds can be done. Moreover the recycled metals are considered as more energy efficient and it will further helpful in lower down cost the original product too. Now it is the time to go for high level recycling reform which not only economically helpful but also help to protect the environment. The study emphasises on eco-friendly technology and high standard recycling techniques to protect the environment and maintain economically stable technology. It is our social responsibility to protect our environment from unwanted e-waste generation.

Keywords: e-waste, m-waste, recycling, social responsibility.

An overview of heterocyclic compounds containing Nitrogen, in cancer prevention and treatment.

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In the present era, Cancer is the leading cause of deaths in the world population which is putting a lot of pressure on researcher is to invent a new drug that can treat cancer with least side effects. Presently, the treatment of cancer is done by various methods that may include chemotherapy, radiotherapy, surgery and immunotherapy in combination or singly along with kinase inhibitors. Most of the anticancer drugs uses concept of kinase inhibition. Number of drugs being used in chemotherapy is having heterocycles as their basic structure in spite of various side effects. Medicinal chemists are focusing on nitrogen containing heterocyclic compounds like pyrrole, pyrrolidine, pyridine, imidazole, pyrimidines, pyrazole, indole, quinine, oxadiazole, azole, benzimidazole, as the key building blocks used to develop biological active compounds. According to FDA databases nitrogen-based heterocycles are the main target for the designing of new target as it occupies almost 60% of unique small-molecule drug share which are used as anticancer drugs. The drugs like Axitinib, Bosutinib, Cediranib, Dasatanib, Erlotinib, Gefitinib, Imatinib, Lapatinib, Linifanib, Sorafenib, Sunitinib, Tivozanib are a few examples that are containing nitrogen heterocyclic. In the present review, we shall focus on the overview of nitrogen containing heterocyclic active compounds as anticancer agents.

Petasis Reaction: A Medicinal Chemistry Review

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The Petasis reaction, also known as Boronic acid Mannich reaction, is a multicomponent condensation reaction. This reaction involves coupling of wide range of amine components, carbonyl components and boronic acid/boronate esters yielding ?- amino acids. Unlike traditional Mannich reaction, this involves milder reaction conditions and it can be carried out in wide range of solvents. Highlight of this reaction is the synthesis of ?-hydrazinocarboxylic acid which is a building block for the synthesis of number of peptidomimetics, antivirals, antibiotics, protease inhibitors and chiral ?- amino acids.

Alkylaminophenols can be synthesized from this reaction which could be used as anticancer agents particularly against human osteosarcoma tumor. Wide variety of aminopolyol products can be formed from this which further could be converted to amino sugars. Enalaprilat, an ACE inhibitor is also prepared with this reaction method. This review highlights the importance of Petasis reaction as synthetic utility in medicinal chemistry.

KEYWORDS: petasis, multicomponent, ?-hydrazinocarboxylic acids, Alkylaminophenols

Visible light Promoted benign photosynthesis of Functionalized Benzazoles

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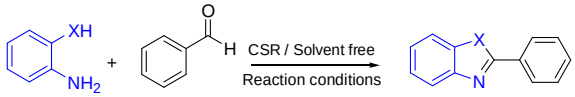
Light offers an ideal approach for environmentally friendly green synthesis being its non-toxicity and nature for prevention of waste.1-5 Development of methods for efficient use of solar radiation has emerged as one of the most recent challenge. Renewable concentrated solar-radiation (CSR) can be considered an icing on the cake fulfilling both the practicality and environmental benefits of photochemical approach unlike many conventional and ultraviolet light promoted methodologies.6-10 This unconventional photo-thermal protocol describes the application of CSR in the synthesis of functionalized 2-substituted benzazoles (benzimidazoles, benzoxazoles and benzothiazoles). Renewable concentrated solar-radiation (CSR) offered a promising en route for the development of practical, highly efficient, scalable, catalyst free and solvent-free clean process leading to the synthesis of functionalized benzazoles. Developed protocol has a very good substrate scope, involves mild reaction conditions and products obtained in good to excellent yields. Method presented the observations in which light alone could affect the remarkable changes with more than 85% energy saving and 75% less reaction time in listed organic transformations.



X=NH, O, S

References:

1 Lewis, N. S. Science 2007, 315, 798.
2 Morton, O. Nature 2006, 443, 19.
3 Albini, A.; Fagnoni, M. Green Chem. 2004, 6, 1.
4 Albini, A.; Fagnoni, M. ChemSusChem 2008, 1, 63.

5 Roth, H. D. Angew. Chem. Int. Ed. 1989, 28, 1193.
6 Oelgemöller, M. Chem. Rev. 2016, 116 (17), 9664.
7 Konig, B. Eur. J. Org. Chem. 2017, 1979.
8 Ravelli, D.; Protti, S.; Fagnoni, M. in Applications of Visible and Solar Light in Organic Synthesis, Ch. 6 Applied Photochemistry: When light meets molecules (Eds.: Bergamini, G.; Silvi, S.), Springer Int. Publ. Switzerlnd, 2016, pp. 281-342.
9 Deshpande, S.; Gadilohar, B.; Shinde, Y.; Pinjari, D.; Pandit, A.; Shankarling, G. Sol. Energy, 2015, 113, 332.
10 Jadhav, N.; Pandit, A.; Pinjari, D. Sol. Energy 2017, 147, 232.

Succinimidinium N-sulfonic acid hydrogen sulfate as an efficient Ionic liquid catalyst for the synthesis of pyrano[3,2-c]coumarins under solvent-free conditions

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Succinimidinium N-sulfonic acid hydrogen sulfate ([SuSA-H]+HSO4-) is found to be a great catalyst for the tandem cyclization of 4-hydroxycoumarin with chalcones for the syntheses of pyrano[3,2-c]coumarins under solvent-free conditions. The reaction is carried out with easily accessible chalcones having various substituents and the protocol is applicable for the synthesis of various biologically important pyranocoumarins. This reaction possibly proceeds through Michael addition followed by cyclization. The catalytic reaction proceeded very smoothly under solvent-free conditions. The product formed is in good yield and the reaction is carried out in solvent free conditions. The short reaction time, no metal, no chromatographic purification and environmentally friendly reaction conditions are various advantages of this method.

The Importance Of Borsche-Drechsel Cyclization In Medicinal Chemistry

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The Borsche-Drechsel Cyclization reaction is used to synthesize tetrahydro carbazoles. The reaction was first described in 1888 by Edmund Drechsel and in 1908 by Walter Borsche. The chemical reaction involves acid catalyzed cyclization of cyclohexanone arylhydrazones. In the first step of tetrahydrocarabazole synthesis cyclohexanone is condensed with phenylhydrazine to form the cyclohexanone phenylhydrazone which is then cyclized to form 1,2,3,4-tetrahydro carbazole. This reaction is a central step in Borsche-Drechsel carbazole synthesis, Fischer Indole synthesis and Piloty Robinson Synthesis. The tetrahydrocarbazole synthesized using this reaction can be further derivatized to form various derivatives which show antibacterial, antiviral, Butyrylcholinesterase (BuChE) inhibitory and anticancer activity.

KEYWORDS : carbazole, 1,2,3,4- tetrahydrocarbazole, indole

Decay of a medium mass compound system formed in ?-induced reaction

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Decay of medium mass nuclear system 120Te* formed in ?-induced reaction is studied using Dynamical Cluster Decay Model of Gupta and collaborators [1]. The experimental data is available for n-decay from 120Te nucleus, when ?-particle is incident on 116Sn target . The ?-induced reactions are important as they impart quality information related to nuclear structure. In the present work, n-evaporation cross section of 120Te has been calculated which find nice agreement with the experimental data [2] at all energies within the spherical as well as quadrupole (?2) deformed fragmentation paths. The quadrupole deformation is considered within the optimum orientation (?iopt) approach. Besides experimental data, statistical calculation are also available in [2], which are shown to under-predict the ground state reaction cross sections at few energies. This observation seems to suggest that DCM description suits better for n-evaporation channel in the dynamics of ?-

induced reaction. Besides this, the structure information as well as other investigations regarding the dynamical evolution of 120Te nucleus are in process.

References:

[1]. B. B. Singh, M. K. Sharma, and R. K. Gupta, Phys. Rev. C 77, 054613 (2008). R.K. Gupta, Lecture Notes in Physics 818 Clusters in Nuclei, ed C. Beck, Vol.I, (Springer Verlag), p223 (2010).

[2]. D. Filipescu, et al. ,Physical Review C 83, 064609 (2011).

Study on 1,3-Dipolar Cycloaddition Reactions : A Review

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The 1,3-Dipolar cycloaddition reactions are simple but powerful tool for the construction of five membered heterocycles such as pyrrolidines, isoxazoles, isoxazolines, pyrazoles, pyrazolones, 1,2,4-oxadiazolines etc. Therefore 1,3-dipolar Cycloaddition (DC) reactions have emerged as one of the important type of cycloaddition reactions from the view point of chemical and biological industry. The earliest 1,3-dipolar cycloadditions were described by Rolf Huisgen, hence, sometimes referred as the huisgen Cycloaddition reaction. The 1,3-cycloadducts attained are influencial bioactive agents that have glucoside inhibitory activity, potent anti-inflammatory, antibacterial , antiviral,antidiabetic , anticancer , and antitubercular activities , calcium entry blocking and Histamine H3 receptor antagonist. The Huisgen cycloaddition reaction has been originally utilized for the synthesis of 1, 2, 3-triazoles regioisomers.

DFT Study of Electronic Properties of Toluene adsorbed on Na-Graphene Interface

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Calculations based on First Principles have been made to show that the isolated Toluene when adsorbed on graphene does not affect the electronic structure of graphene but if we place toluene on Na-graphene, it results in significant charge transfer on doping. The results show that sandwiching Na atom between a layer of graphene and toluene leads

to n-type doping of graphene. All the geometry optimizations and electronic structure calculations have been made using SIESTA Software based on density functional theory(DFT). We draw the conclusion that electronic properties of adsorbates intercalated between graphene and hydrocarbon layer can be different from single layer graphene. So alkali metals adsorbed on graphene can be a useful sensor for toluene and other hydrocarbons.

Semiconductor nanocrystals (ncs) and quantum confinement

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The semiconductor NCs constitute unique class of material that are intermediate between molecular clusters and bulk solids. The smallest NCs (~1 nm) are made up of nearly 100 atoms while largest NCs (>20 nm) are made up of over 100,000 atoms). This size regime between molecular and bulk semiconductor material is characterized by a particular change in the properties of the semiconductor due to quantum mechanical effect. In large size bulk material, the electronic structure is not limited by the dimension of the material. The wavelength of electrons is quite smaller than the usual length of the material. As particle size decreases from bulk to nanomaterial, the valence band splits up in to discrete energy levels. The electron and hole motion gets confined in three dimensional spaces with the decrease in particle size. Quantum confinement effect is characterized by electronic transitions which have been moved to higher energies upon decrease in the size of the particle. Qualitatively, confinement effect is equivalent to the problem of particle in a box. Hence, discrete energy levels are formed depending on the size of the structure as per the simple potential well problem in fundamental quantum mechanics.

In a macroscopic semiconductor crystal, the energy levels form bands. The valence band is filled and the conduction band is completely empty at 0 K. The bands are separated with a specific energy gap, Eg. When an electron gets excited due to thermal excitations, an electron-hole pair is created. The electron in the conduction band and the hole in the valence band can be bound when they approach each other at a finite distance. This bound pair is called an "exciton?, which is delocalized throughout the crystal. The dimension of the exciton, in case of bulk semiconductor, can be theoretically calculated by exciton Bohr radius. The de Broglie wavelength of the materials is in the range of nanometers and strong confinement effects are manifested only when the particle dimension approaches this value. But, when the radius of a semiconductor nano crystal is reduced to less than its exciton Bohr radius, the exciton will be strongly restricted in this limited volume resulting in significant change in the electronic structure of the three-dimensionally confined electrons and holes. Reducing the

dimensions to one, two or three directions leads to quantum wells, wires or dots, respectively. The exciton Bohr radius (aB) is often used to judge the extent of confinement in a semiconductor nanocrystal with radius, a. In the analysis of experimental data, one needs to consider three different regimes: a > aB, a ~ aB and a < aB, which are named as weak confinement, intermediate confinement and strong confinement regimes, respectively. The above theory was used as the basis for the research on semiconducting nanostructures and its structural, morphological and magnetic characterization.

Declourization of 3, 5-nitroformazans using Coriolus Versicolor

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Dyes used for colouring of materials are obtained from different sources. They can be natural or synthetic. Vegetables and animal sources of dyes are known since long. It is a well known fact that the aqueous solution of organic compound imparts their colour to the materials. Dyes are classified based upon their chemical constition or their application to fibers. Certain groups of dyes are dependent on each other according to their chemical behavior and method used for dyeing.

Azo dyes, the largest group of dyes , have N=N- chromophore in an aromatic system. Azo dyes can be classified into various tyoes such as monazo, disazo, trisazo , tetrakisazo and polyazo according to the number of azo grorup . Presence of HCl and $NaNO_2$ at freezing temperature leads to diazotization of a primary amine, producing a diazonum salt that couple with aromatic compound , giving an azo-dye.Azo pigments are colourless particles (typically earths or clays),which have been colored using an azo compound.

3-nitro-1,5-diaryformazans ,a special class of formazan dyes are azo -hydrazo compound commonly used for dyeing purpose ..The cosmetic, textile, leather, paper, pharmaceutical and food industries produce and use many sunthetic with the syeing process. Nearly 10,000 different textile dyes are commercially available and about 50% of them are azo dyes.

In the present study, an attempt has been made to assess the potential of the fungus corilolus versicolor for decolourization and colour removal of 3-nitro-1, 5-tolyfprmazan

Aresenic Posioning And Its Effects On Human Health : A Review

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The incidence of a arsenic contamination of ground water used for both irrigation as well as for human consumption as well as in industries has take n the dimension of an epidemiological problem WHO and VSEPA provided maximum permissible limit of As of 10 mg for drinking water has been found to be much higher. it has established that inorganic arsenic is extremely to toxic both acute and chronic , Arsenic may enter in to the body through ingestion , inhalation or skin absorption and may cause oxidative stress, damage to DNA, modification of epigenetic DNA, induction of instability in genome, immunomodulation , inflammation and cancer. In the review and attempt has been made to summarize the toxic effects of Arsenic on human health.

Cobalt Induced Oxidative Stress in the germination of Mung Bean (*Vigna radiata*) Seedlings

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Cobalt a natural earth element not classified as essential element however is usually described as beneficial element. Cobalt a trace element is necessary for normal growth and metabolic function in plant, but at higher concentration it is toxic and may severely interfere with physiological and biochemical functions . in the present invertigation an attempt has been made to study the cobalt (II) induced oxidative stress in the germatition of mung bean *(vigna radiata)* by observing the effect of cobalt (II) on activity of superoxide dismutase, peroxide activity and lipid peroxidaton.

Ecopedagogy : A 'Benison' for the Proponents of Ecological Conservations

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Ecopedagogy which has emerged from the views of leftist educators like Paulo Friere in central South America , has its primary goal the re-education of "planetary citizens" to the care for, respect and take action for "all life". The mission of this approach is to devise , develop and present a theory about interrelations between the societies and the environment and hence create the "planetary consciousness" through novel teaching content and methodology. Through its three dimensional approach that is cosmological, technological and organizational ecopedagogy does not limit itself to formal education only but spreads its wings in the horizon of public participation especially in local ecological issues. The critics fed up with green wasting of environmental terminology, often raise doubts about the actual application where the environment education is reduced to the forms of experimental outdoor classrooms. It fails to articulate a necessity for the understanding of unsustainable, endangered modern lifestyle and its impact on mother earth.

Synthesis of benzothiazoles and its derivatives utilizing solid supported reagents: A Review

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Benzothiazole is a versatile class of heterocyclic compounds which shows a variety of biological properties. The present review article mainly focuses on the various types of reactions involved in the preparation of 2-substituted benzothiazole nucleus and its derivatives utilizing the solid supported reagents. A series of reactions has been developed showing the potential of utilizing both inorganic and organic polymeric frameworks as the solid phase. The present review has shown that alumina1, zeolite2, clay, silica surface alone or having doped with various inorganic salts could be utilized in carrying out different organic reactions under solvent-free conditions producing molecules of biological and industrial importance.

Mild reaction conditions, easy work-up procedure, selective synthesis of the target molecules, and recycling capability of the supported reagent or catalyst are some of the advantages of adopting solid-phase organic reactions. Further development of newer solid phases, immobilization procedures resulting in regular dispersion and finally their new applications are expected in the years to come.This comprehensive review will be highly beneficial to the researchers working in this field. They can discover better and easy ways of synthesis with enhanced yield, purity in a shorter span of time. They can further explore this class to increase the scope of existing biological activity profile.

References:

1 S. Bahadorikhalili, A. R. Sardarian, Polycyclic Aromatic Compounds 2018, 1-8 10.1080/10406638.2018.1517808.

2 S. S. Katkar, P. H. Mohite, L. S. Gadekar, K. N. Vidhate, M. K. Lande, Chinese Chemical Letters 2010, 21, 421-425 10.1016/j.cclet.2009.10.020.

3 P. K. Samanta, R. Biswas, T. Das, M. Nandi, B. Adhikary, R. M. Richards, P. Biswas, Journal of Porous Materials 2018, 10.1007/s10934-018-0626-z.

Volumetric, acoustic and infrared spectroscopic study of amino acids in aqueous solutions of pyrrolidinium based ionic liquid, 1-butyl-1-methyl pyrrolidinium bromide

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The effect of ionic liquid, 1-butyl-1-methyl pyrrolidinium bromide on the thermodynamic properties of glycine, L-alanine and L-valine in aqueous solution was studied at the temperature range of 288.15-308.15 K and experimental pressure of p=0.1 MPa by density, ultrasonic speed and FTIR spectroscopic techniques. Apparent molar volumes, standard partial molar volumes, standard partial molar volumes of transfer and hydration number are evaluated by using density data. Side chain contributions and temperature dependence of partial molar volume and pair and triplet interaction coefficient for volume have been calculated. Apparent molar isentropic compression, standard partial molar isentropic

compression, standard partial molar isentropic compression of transfer and hydration number have been calculated using ultrasonic speed data. Fourier transform infrared (FTIR) spectral studies have also have been carried out for the present mixture. These volumetric, acoustic and spectroscopic studies can help to understand the mixing effects and other complex biological processes between amino acids and ionic liquid aqueous solution.

Keywords : Density, Ultrasonic speed, FTIR spectrum, Amino acids, Ionic liquid, Hydration number.

Quantitative Study of Fluoride Content and its impact on Human Health in Correlation with various Quality Parameters of Drinking Water

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Water provides a unique medium to many physical, chemical and Biochemical Processes. Any minute change in water quality parameter may adversely and favorably affect the ecosystem as well as biological and industrial process. Fluoride in low concentration of 0.5 to 1.5ppm isbeneficial for human health but its excess amount can cause serious health hazards and can interfere with various industrial synthetic pathway.Different forms of fluoride exposure are of importance and have shown to affect the body's fluoride content and thus increasing the risks of fluoride-prone diseases. Fluoride has beneficial effects on teeth at low concentrations of 1 mg/L by preventing and reducing the risk of tooth decay. Concentrations lower than 0.5 mg/L of fluoride however have shown to intensify the risk of tooth decay. Fluoride can also be quite detrimental at higher concentrations exceeding 1.5 - 2 mg/L of water. High concentrations of fluoride pose a risk of dental fluorosis as well as skeletal fluorosis and osteoporosis. In present study drinking water samples fromvarious recourses of Punjab and northern Rajasthan have been analyzed in triplicate with respectto pH, alkalinity, Total hardness Cl^-, SO_4^{2-}, Ca^{2+}, Mg^{2+} turbidity, content. The area under study is extension of peninsular block and mainly composed of quartzite, sandstone, micaschilt, phyltis etc. which are responsible for high Fcontent in area. In thisstudy Fcontent water sample is correlated with the depth, alkalinity, pH, total hardness andcarbonate content. The study will be helpful to many water quality analysts, biologists,ecologists, environmentalists and industrialists.

Key words: Water quality parameters, fluoride content, correlation analysis.

Green Chemistry : A Sustainable Development

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Sustainable development means meeting the needs of the present generation without compromising the needs for the future generation. As on today maximum pollution is caused by numerous chemical industries. Therefore attempts have been made to design synthesis for manufacturing processes in such a way that waste products are minimum, they have no effect on environment and their disposal is convenient. For carrying out reactions it is necessary that starting materials, solvents and catalysts should be carefully chosen. Synthesis method should be designed in such a way that the starting materials are consumed to maximum extent in final product and reaction should also not generate any toxic by product. Green chemistry eliminates waste at source that is it is primary pollution prevention rather than waste remediation. Prevention is better than cure the first principle of green chemistry.

Green Chemistry Past, Present And Future

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The green chemistry provides vast number of opportunities to discover new synthetic approaches using alternative feedstock; Eco friendly reaction conditions, energy minimization and reduces or eliminates the use or generation of hazardous substances in design, manufacturing and applications of chemical products. Hundreds of tonnes of hazardous waste are released to the air, water, and land by industry every hour. Chemical industry is the biggest source of such wastes. The use of toxic reactants and reagents also make the situation worse. The pollution reached peak levels that government had made laws to minimize it. Green chemistry is a environmentally benign chemistry. Green chemistry is not only good for environment but also for industry. Green chemistry incorporates in principle, energy conservation and other environmental related issues such as bioremediation. For example Compressed CO_2, the specific properties of Supercritical CO_2 make it an interesting "green" replacement for organic solvents, which are often less than ideal owing to their acute toxicity,

ecology hazards or difficulty in disposal and recycling. Green chemistry also introduces changes in day-to-day life such as dry cleaning of clothes, perchloroethylene is commonly being used as a solvent for dry cleaning. It is now known that perchloroethylene contaminates groundwater and is a potential carcinogen. A technology, known as micelle technology which evolved a metal cleaning system that uses CO_2 and a surfactant, thereby eliminates the need for halogenated solvents. Another example is Benzene (C_6H_6) as a solvent must be avoided at any cost since it is carcinogenic in nature. If possible, it is best to carry out reactions in aqueous phase. With this view in mind, synthesis methods should be designed in such a way that the starting material is consumed to the maximum extent in the final product. The reaction should also not generate any toxic by-products. The expansion of green chemistry needs to increase at an accelerated pace if molecular science is to meet challenges of sustainability. Most importantly scientific, engineering, educational communities should work together for sustainable future through green chemistry.

A review on hospital waste management techniques

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Hospitals are meant for human health care and well being of the human beings. In the recent years the hospital waste management has become the major issue of developing nations across the world. Hospitals generate several tons of waste daily which include thewaste produced in the course of various health care activities during Treatment,Diagnosis, surgeries and Immunization. According to WHO classification there are general waste, sharps waste,infectious waste, pathological waste, radio-active waste, pharmaceutical waste, chemical waste, pressurised container and genotoxic waste.In order to dispose this rubbish properly it need to go through the proper waste treatment otherwise it can leadto various environmental and health hazards.The persons who are at the greater risk of infections by this waste are patients, visitors, medical staff, paramedical staff and sanitation staff. These health hazards due to improper handling and treatment of waste are preventable provided that proper waste management is carried out by the hospitals by proper segregation of the waste. In order to achieve this, hospitals have installed multicoloured containers for different types of waste like yellow colour for infectious waste, red colour for plastic waste for example catheters, injections & syringes, blue colour is used for all types of glass waste and black colour is used for sharp waste.Presently in hospitals, waste segregation and their disposal are main concern so, if people become aware regarding this, there will be the development of better waste management system.

Synthesis of 2-Aminothiophene by Gewald Multicomponent Reaction

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The three component Gewald reaction is a versatile method that involves condensation of aliphatic aldehydes, ketones, β-dicarbonyl compounds with active nitrile and elemental sulfur to synthesize thiophene molecules substituted at 4- and 5-positions. There are various routes for the synthesis of 2-aminothiophenes involving reduction of a nitro group, Curtius reamngement, Hoffmann reaction, Schmidt reaction, Beckmann rearrangement, nucleopbilic displacement of substituents such as mercapto, and hydroxy, and cyclisation of thioamides and their S-alkyl derivative, Stacy and Eck developed a multistep route for the synthesis of unsubstituted 2-aminothiophenes, all of these routes involve mutltiple steps and difficult procedures but, Gewald method is very simple, and prominent method to synthesize substituted thiophene in excellent yield. The importance of the Gewald reaction product is that it is abundantly used in pharmaceutical industry to produce bioactive compounds.

A review on Biginelli multicomponent reaction

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The Biginelli Reaction is a one-pot multicomponent cyclocondensation of ?-keto ester, urea and aromatic aldehyde which leads to the synthesis of functionalised 3,4-dihydro-2(H)-pyrimidinones (DHPMs). This three-component reaction for the synthesis of dihydropyrimidinone and corresponding dihydropyrimidinethiones has now been known for more than a century since first reported in 1893. Cyclocondensation product of Biginelli Reaction i.e. Dihydropyrimidines are the most important heterocyclic ring systems and their derivatives are widely used in natural and synthetic organic chemistry due to their wide spectrum of biological and therapeutic properties . A series of pharmacological properties of DHPMs have been reported, which include antiviral, antitumor, anti-inflammatory, antibacterial, antifungal, anti-epileptic, antimalarial, antileishmanial.

Novel triazole derivatives as promising multi-target-directed agents for the treatment of Alzheimer's disease

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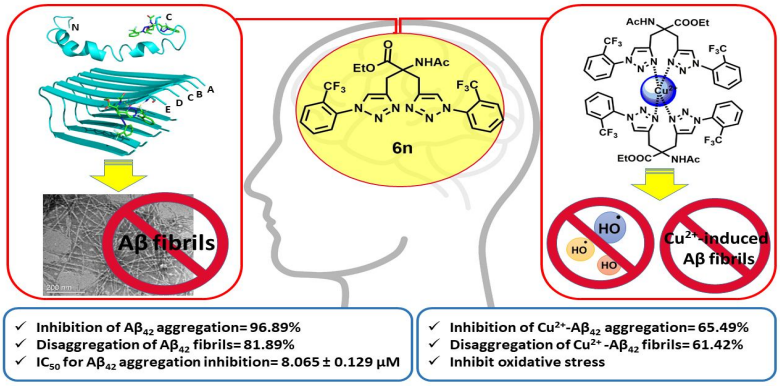
The highly ordered peptide or protein aggregates in brain are thought to be responsible for a number of protein misfolding diseases in humans that include Alzheimer disease (AD), Parkinson disease etc. A novel series of triazole-based compounds have been designed, synthesised and evaluated as multi-target-directed ligands (MTDLs) against Alzheimer disease (AD).1 The triazole-based compounds have been designed to target four major AD hallmarks that include Aβ aggregation Among the synthesised compounds, 6n having o-CF3 group on the phenyl ring displayed most potent inhibitory activity (96.89% inhibition, IC50= 8.065 ± 0.129 μM) against $A\beta_{42}$ aggregation, compared to the reference compound curcumin (95.14% inhibition, IC50= 6.385 ± 0.009 μM)., metal-induced Aβ aggregation, metal dys-homeostasis and oxidative stress. Compound 6n disassembled preformed Aβ42 aggregates as effectively as curcumin. Furthermore, 6n displayed metal chelating ability and significantly inhibited Cu^{2+}-induced $A\beta_{42}$ aggregation and disassembled preformed Cu^{2+}-induced $A\beta_{42}$ aggregates. 6n successfully controlled the generation of the reactive oxygen species (ROS) by preventing the copper redox cycle. In addition, 6n did not display cytotoxicity and was able to inhibit toxicity induced by $A\beta_{42}$ aggregates in SH-SY5Y cells. The preferred binding regions and key interactions of 6n with $A\beta_{42}$ monomer and $A\beta_{42}$ protofibril structure was evaluated with molecular docking.2 Compound 6n binds preferably to the C-terminal region of $A\beta_{42}$ that play a critical role in $A\beta_{42}$ aggregation. The results of the present study highlight a novel triazole-based compound, 6n, as a promising MTDL against AD.



References

1. (a) Kaur, A., Mann, S., Kaur, A., Priyadarshi, N., Goyal, B., Singhal, N. K., and Goyal, D. (2019) Multi-target-directed triazole derivatives as promising agents for the treatment of Alzheimer's disease. Bioor. Chem. DOI: 10.1016/j.bioorg.2019.03.058; (b) Goyal, D., Kaur, A., and Goyal, B. (2018) Benzofuran and indole: promising scaffolds for drug development in Alzheimer's disease, ChemMedChem 13 (13), 1275-1299; (c) Goyal, D., Shuaib, S., Mann, S. and Goyal, B. (2017) Rationally designed peptides and peptidomimetics as inhibitors of amyloid-? (A?) aggregation: potential therapeutics of Alzheimer's disease. ACS Comb. Sci. 19 (2), 55-80. (d) Savelieff, M. G., Nam, G., Kang, J., Lee, H.J., Lee, M., and Lim, M. H. (2019) Development of multifunctional molecules as potential therapeutic candidates for Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis in the last decade, Chem. Rev. 119 (2), 1221-1322

2. (a) Shuaib, S., and Goyal, B. (2018) Scrutiny of the mechanism of small molecule inhibitor preventing conformational transition of amyloid-?42 monomer: insights from molecular dynamics simulations. J. Biomol. Struct. Dyn. 36(3), 663-678; (b) Shuaib, S., Saini, R. K., Goyal, D., and Goyal, B. (2017) Insights into the inhibitory mechanism of dicyanovinyl substituted J147 derivative against A?42 aggregation and protofibril destabilization: a molecular dynamics simulation study. ChemistrySelect 2(4), 1645-1657.

Adsorption Studies of Neonicotinoid Insecticide in Different Soils of Punjab Region

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Neonicotinoid insecticides are regarded as promising insecticides to control various type of harmful insect species. These insecticides mainly inhibit the functioning of nicotinyl acetylcholine receptor. However, directly or indirectly the pesticides applied on crops affect the soil characteristics. The laboratory experiments were carried out to study the adsorption of a neonicotinyl insecticide in soil. The effects of pH, concentration and temperature on adsorption were also investigated. For the same, the soil samples were collected from three different regions of Punjab. The results show the maximum adsorption at pH 6 that may be due to some ionic interactions between the insecticide and soil. The change in concentration of the insecticide shows the variation in adsorption percentage of insecticide and it shows increase with decrease in concentration. Adsorption isotherms are also applied on adsorption studies. The Freundlich adsorption isotherm fits well for the adsorption studies on all the selected soils with correlation factor more than 0.90. The adsorption increases initially with increase in temperature upto 33^{o}C and afterward it decreases.

Synthesis, Characterization and Screening of Substituted 4-Biphenyl Acétamides against Curvalaria lunata

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Biphenyl derivatives constitute the class of polycyclic aromatic hydrocarbon containing more than one aromatic ring and have been found to be most effective against the many therapeutic diseases. Therefore, a new series of Substituted-4-Biphenyl-Amides have been synthesized by condensation of 4-Biphenyl Acetic Acid with different primary aromatic as

well as aliphatic amines.4-Biphenyl Acetic Acid was first treated with Thionyl Chloride in dry benzene to prepare substituted-4-biphenyl acetyl chloride, which is then treated with different aliphatic or aromatic amines to synthesize various substituted-4-biphenyl Acidamide derivatives. All these compounds are characterized by the analytical spectroscopic techniques to evaluate the structure elucidation. The synthesized biphenyl compounds were screened for antimicrobial and antifungal activity via disc diffusion method against Curvalaria lunata fungus. Inspite of antimicrobial and antifungal activity these derivatives are also rich in other curative activities such as analgesics, antipyretics, anti-inflammatory, anticancer, antibacterial, anti-psychotic and anxiolytic activities etc. However, in this article we have screened anti-fungal properties for our synthesized compounds and exhibits good activity when they tested against Curvalaria lunata.

Keywords: Synthesis, 4-Biphenyl Acetic Acid (4-BPAA), Substituted-4-Biphenyl Acid-Amides, Spectral studies, Anti-Fungal Properties.

Role of Pesticides and Heavy Metals in Pre- term Births of Infants

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In India, 3,341,000 babies are born premature each year and 361,600 children under five die due to direct pre-term complications (WHO 2017). Babies born before 37 weeks of pregnancy is known as pre-term birth. Environmental factors like pesticides, and heavy metal like lead, cross the placental barrier hence increase the risk of pre-term birth. Being lipophilic in nature these foreign chemicals transmit across the placenta from maternal blood to fetus. Pesticide mainly Dichloro di phenyl trichloro ethane (DDT) is the most lethal pesticides due to its persistent nature, poorly excreted, its property to mimic estrogen hormone and biomagnified in the food chain, thereby increasing potential risk of pre-term birth. Among the metals, lead exposure has been studied the most intensively for an association with pre-term birth.

Evaluation and Antibacterial properties of Achyranthes aspera (Apamarga)

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In the present investigation, an attempt has been made to investigate the phytochemical and Antibacterial properties of methanol, petroleum ether, chloroform extracts of Achyranthes aspera(apamarga) invitro against Escherichia Coli and Bacillus Licheniformis by agar well diffusion method. Phytochemical screening revealed the presence of alkaloids, tannins, flavonoids, etc in plant, all the extracts of Achyranthesaspera(apamarga) were observed to be more potent against Escherichia coliwith maximum zone of inhibition. These findings therefore justify the medicinal use of Achyranthes aspera (apamarga).

Organic Nanoparticles Of A Dihydropyrimidine-Based Compound As A Probe For Detection Of Sodium Ions

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Organic nanoparticles offer judicious sensing systems for biologically relevant analytes because of their ease of synthesis, sensitive response, enhanced photo-stability, biodegradability and cost effectiveness. Sodium is an essential alkali metal prominent in extracellular fluid that regulates water level and electrolyte balance in the body. Any deviation in its concentration may cause detrimental effects on health.

In the present report, a dihydropyrimidine-based compound was engineered into stable organic nanoparticles (ONP) using reprecipitation technique. The size and shape of organic nanoparticles was characterized through TEM and DLS. The organic nanoparticles, ONP acted as an efficient fluorescent nanosensor for selective detection of Na (I) ions via fluorescence enhancement with nanomolar detection limit. The successful detection of Na (I) was realized by performing a titration between the proposed sensor and Na (I). The nanosensor found its applicability in a wide pH range from 3 to 12, which is appropriate for evaluation in environmental and physiological conditions. The selectivity for Na (I) ions was further

confirmed with competitive binding studies which established the absence of any interference from other analytes under study. Moreover, real sample analysis established the practical applicability of the developed probe in biological and environmental samples. The proposed strategy provides a facile, non-invasive, sensitive and economic platform for the estimation of Na (I) ions.

Lithiation of Substituted Pyridines at cryogenic conditions

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Lithiation of substituted and unsubstituted pyridine ring has constantly invited the attention of chemists world over as it is a convenient route to many functional group manipulations, leading to molecules that are of material and biological interests. The direct lithiation of picolines and lutidines invariably leads to the functionalization of acidic methyl group(s), showing no preference for the ring protons. One of the methods for obtaining preferential ring lithiation in these derivatives involves the reaction of lithiating reagents with halopyridines and -picolines at cryogenic and non-cryogenic conditions. The direct ring lithiation of picolines and lutidines has only been achieved with the aide of complexing reagents. For example, ?-lithiation of the substituted pyridines has been reported with 3-8 equivalents of n-BuLi-LDMAE complex (6-16 equivs. n-BuLi). A large excess of base is used in these reactions, which necessitates exorbitant consumption of electrophiles and tedious purification procedure. This drawback limits the scope of these reactions particularly, for large-scale synthesis. The complexation of boron trifluoride with pyridine, 4-picoline and 4-(N,N-dimethylamino)pyridine has also been explored for ?-proton abstraction with lithium tetramethylpiperidide (LTMP). Merits and Demerits of various methodologies used for the lithiation of pyridine derivatives will be discussed in the paper.