3rd NATIONAL SEMINAR
ON
CURRENT TRENDS
IN LIFE SCIENCES (NSCTLS-2021)

In association with NASI (Bhopal Chapter) and Society of Life Sciences

January 29, 2021

ABSTRACT BOOK

Amity Institute of Biotechnology
Amity University Madhya Pradesh, Gwalior, India

3RD NATIONAL SEMINAR
ON
CURRENT TRENDS IN LIFE SCIENCES

JANUARY 29, 2021

ABSTRACT BOOK

AMITY INSTITUTE OF BIOTECHNOLOGY
AMITY UNIVERSITY, GWALIOR

Message from Founder President

On behalf of Amity University, it is my great pleasure and honour to extend my warmest welcome to all participants in this 3rd National Seminar on Current Trends in Life Sciences on January 29, 2021. The seminar will be organised in online mode.

I wish to congratulate and convey my gratitude to the Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior for organising this great and very important event. The subthemes chosen for the conference would greatly help to highlight the causes and extent of the problem, its likely impact on the environment, and the steps that need to be taken to minimize the unwanted health consequences.

The Seminar is a unique platform not only for the presentation of new technology, but also for unique networking opportunities. With delegates from the national community, it provides the ideal forum to discuss the latest findings, put them into context and understand their impact for human welfare. The seminar will expose the students and young participants to different aspects of the Life Sciences and interdisciplinary approach of science and technology to meet our future requirements.

Wishing the seminar great success in achieving its objectives

Dr. Ashok Kumar Chauhan

Founder President
Ritnand Balved Education Foundation (RBEF)
(The Foundation of Amity Institutions and the Sponsoring Body of Amity Universities)

Message from Additional President-RBEF & Chief Patron

It gives me immense pleasure to learn that Amity Institute of Biotechnology, Amity University Madhya Pradesh is organising a 3rd National Seminar on *Current Trends in Life Sciences* on 29 January, 2021.

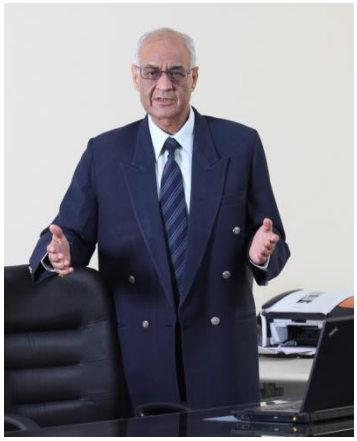
Modern science has brought about hitherto unimagined progress and developments in human civilization. Although it is desirable, this progress is gradually making the world inhospitable due to several problems generated by numerous products and by-products of civilization. Use of life sciences coupled with other modern techniques is one of the most promising and economical strategies for solving these problems.

I am sure that the seminar will provide a good forum for presenting interdisciplinary approaches to new technologies and will help build collaboration among scientists and institutions.

I express my heartiest congratulations to the organisers and convey my best wishes for the grand success of the seminar.

Dr. Aseem Chauhan

Message from Vice Chancellor



It is with immense pleasure I warmly welcome all the participants to the 3rd National Seminar on Current Trends in Life Sciences on behalf of Amity University Madhya Pradesh, Gwalior. The seminar will be organised in online mode. This is the third seminar in series on Life Sciences. Earlier, we have successfully organised this event in 2017 & 2019.

Life Sciences and Modern Biology are increasingly important fields in the modern era. The innovations and researches in this field are impacting the society positively by mitigating diseases, leading to healthy and longer lives. More innovations will contribute to the sustainability of human beings in this century. The Post-Genomic era has the potential for creating new bio-industries based on the knowledge of life and how the life builds and maintains proteins, cells, and organisms.

The Seminar is a platform for researchers and biomedical scientists to share and discuss the recent advances in research for providing more effective and affordable health services to humans. However, the researchers need to carefully analyse the adverse effects of new technologies when brought in contact with human body or injected inside the body.

I have no doubt that this seminar can promote such developments and innovations in the field of Life Sciences.

We look forward to share the vast knowledge in these areas and hope that this seminar will open new vistas for future research and development.

I wish the seminar a great success.

Lt Gen VK Sharma, AVSM (Retd)

Message from Pro Vice Chancellor

It is a great honour and pleasure to welcome all participants to the 3rd National Seminar on Current Trends in Life Sciences. The seminar will be organised in online mode.

Recent breakthroughs in Life Sciences have greatly transformed research in both basic and applied fields and we can expect further transformations in the coming few years. These new technologies and new discoveries are having profound impacts on improving human health and human living, as well as on protecting the environment. The conference is important not only for researchers, Scientists and academics but also for policy makers to further understand the importance of Life Sciences for the socio-economic development of the country. India, being a resource rich country could make use of its natural resources to develop industry in health, food & nutrition etc. effecting people positively.

I congratulate the presenters for their commitment to knowledge creation through research and sharing with others. I am sure the outcome would bring benefit to the people.

Prof.(Dr.) M.P. Kaushik

From the Desk of Convener

Welcome to 3rd National Seminar on Current Trends in Life Sciences!

The Seminar, organised by Amity Institute of Biotechnology (AIB), has been acting as a scientific meeting place for most Life Scientists, researchers and academicians where the state-of-the-art research and latest advanced findings in the field are presented. A range of topics at the frontier of knowledge in the field of Life Sciences and allied areas will be discussed and a wide number of scientific talks will be given by distinguished scientists in different sessions. AIB initiated the first flagship event in 2013 on a different theme. Since this inception, various top-level national and international events have led an impactful existence across the globe.

The 3rd National Seminar on Current Trends in Life Sciences is the third seminar in series on similar theme. Its main priority is to serve as an effective platform for academic and scientific experts and students from top institutions across India sharing their research achievements, to exchange ideas, to establish relationships for future high-level researches in the Life Sciences.

Extensive research on Life Sciences and allied areas has unveiled many interesting and promising applications in health, agriculture, environment and industry. In order to benefit mankind for such discoveries, it is necessary to cross the chasm between basic sciences and applied sciences. This effort will require a multi-disciplinary approach combining research in frontier areas of Life Sciences. The aim of this conference was to identify the paths between fundamental research and potential applications in Life Sciences and Modern Biology.

The seminar consists of stimulating program of sessions, including; keynote address, Invited Talks, Oral Presentations and Poster presentations.

We aim to make the Seminar a genuine two-way process and as such, technology knowledge transfer can be further enhanced through the interactivity.

Prof. (Dr.) Rajesh Singh Tomar
Director, Amity Institute of Biotechnology &
Dean (Academics), Amity University Madhya Pradesh, Gwalior

Secretary, The Society of Life Sciences

It give me immense pleasure that Amity Institute of Biotechnology, Amity University Gwalior (M.P.) is going to organize an 3rd National Seminar on "Current Tends in Life Sciences NSCTLS-2021" in collaboration with The Society of Life Sciences (SLS) and Bhopal Chapter NASI, Prayagraj (U.P.) on 29 January, 2021. I hope that this National Seminar will through light on the problems in the emerging fields for better utilization of unexplored natural resources for human welfare in sustainable manner. To organize such an academic event is an important attempt for providing a forum for academicians, scientists, policy makers and organisations working for environmental sustainability and in field of Life Sciences.

I extend my best wishes for grand success of the event.

Prof. Shivesh Pratap Singh

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Convener & Chief Coordinator: Prof. (Dr.) Rajesh Singh Tomar

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6	Poster Session1 &2	**Faculty Coordinator:** Dr. Raghvendra Saxena	Rajni Yadav Muskan Saxena Divleen Kaur Sachdeva	+91 97533 16861
7	Poster Session3 &4	**Faculty Coordinator:** Dr. Manish Kumar	Rajni Yadav Muskan Saxena Divleen K Sachdeva	+91 73760 30085
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10	Valedictory Session	**Faculty Coordinator:** Prof. (Dr.) Rajesh Singh Tomar **Members:** Dr. Neha Sharma Dr. Pallavi Singh Chauhan Dr. Asha Singh	Shweta Singh Anmol Anand Shivangi Pal	+919301117515 +9181201 40568 +91 89894 58622 +91 82692 94603
11	Certificate distribution	**Faculty Coordinator:** Dr. Manish Kumar **Members:** Dr. Pallavi Singh Chauhan Dr. Asha Singh	Harleen Rathore Anjitha M Soumi Chattaraj	+91 73760 30085 +91 89894 58622 +91 82692 94603
12	Full Length Papers	**Faculty Coordinator:** Prof.(Dr.) Vikas Shrivastava **Members:** Dr. Raghvendra Kumar Mishra Dr. Anurag Jyoti	Aradhana Gupta Neha R. Kumar Purti Soni	+91 94254 91300 +91 74154 44342 +917898805402
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KEYNOTE ADDRESS

Shared Genomic Segment (SGS) analysis for Disease Gene Mapping

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Statistical mapping of disease genes refers to identifying DNA variants that are significantly associated with disease phenotypes. For example, individuals affected with a disease may more often carry a specific mutant allele than is present in the general population (for family members, an analogous analysis is to establish genetic linkage between a variant and a disease).

The classical approach is to handle one variant at a time, which is appropriate when a single variant is underlying disease. However, the "signal" based on a family or a set of unrelated case-control individuals may not be strong enough to establish statistical significance. A solution is then to assess the probability that multiple individuals (or families) show evidence for disease association for the same small genomic region, i.e. to identify a genomic segment shared (SGS) between individuals or families. A low random probability (p-value) of sharing can lead to significance even if the association statistic is not very strong.

We developed and implemented (http://lab.rockefeller.edu/ott/programs) an approach of SGS analysis (1) and tested it on individuals carrying pathogenic variants in the BRCA1 (breast cancer) gene.

The approach developed here to establish statistical significance is a form of equivalence testing, in which the classical null and alternative hypotheses are reversed (2-4).

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INVITED TALKS

IT-1
Prospects of ethnobiology in india
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Ethnobiology is an interdisciplinary subject of science and requires approach from different fields. There is more interest in ethnobiology today, than at any time in the discipline's history. Huge data on various ethnobiological aspects has been collected in India and abroad. Looking to the scope of the subject now many developed countries are promoting education and research in ethnobiology. Several fields of ethnobiology have broad prospects and attracted the attention of researchers e.g. : discovery of new herbal drugs & bioactive compounds, biodiversity its loss and reassessment, threatened species, nutraceutics, germ plasm collection & conservation, Molecular & Cellular Biology, Cottage & Craft Industries, NWFPs, Loss of cultural heritage, IPR issues. In spite of all these avenues, ethnobiology is suffering from many deficiencies, especially the lack of theoretical basis &its real concept among many researchers, educational opportunities, and research support. To be a good ethnobotanist a thorough knowledge of plant taxonomy is necessary, but this aspect is lacking in many countries including India. An overview of taxonomy shows that it has never been more relevant than in the present time of environmental concerns and species loss.Being a treasure of rich flora and fauna, a large population of tribals and other folk people, immense traditions & cultural heritage, India has more prospects through ethnobiological knowledge. Some case studies from India indicate that ethnobiological knowledge has helped in conservation of culture, traditions, biodiversity and other resources and generation of employment. In Madhya Pradesh" Threatened Status" of some plant species could be assessed only after ethnobotanical survey and now steps are taken for their conservation, e.g. *Commiphora wightii, Ficus krishnae, Manilkara hexendra, Pterocarpusmarsupium* etc. Organization of folk festivals in this state has also made people aware about man-plant relationship. Some plants based cottage industries are providing employment opportunities to folk people. Local farmers are now cultivating many medicinally important plant species like, *Withania somnifera, Chlorophytum vorivillianum, Gloriosa superba, Asparagus racemosus, Andrographi spaniculata, Gymnema sylvestre, Cissus quadrangularis, Plumbago zeylanica etc.*It has certainly helped in raising their economy. All these efforts have good prospects for next two to three decades.

IT-2
Role of Potassium in Alleviating Stress-Induced Changes in Plants
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Drought and salinity are two common environmental abiotic stresses largely influencing agricultural productivity in different parts of the world.Plant and agricultural scientists have focused their attention on addressing the challenges posed by abiotic stresses and comprehending the strategies to ameliorate the adverse effects. Many abiotic stresses

increase the production of ROIs (reactive oxygen intermediates) resulting from photorespiration, photosynthetic apparatus and mitochondrial respiration. Antioxidants in plants work to maintain the delicate balance between reactive oxygen species (ROS) production and detoxification. ROS scavenging can be achieved through enzymatic antioxidants like superoxide dismutase (SOD), catalase (CAT), peroxidases (PODs) etc and non-enzymatic components such as polyphenols, carotenoides, ascorbic acid and tocopherols. Among the macronutrients, potassium occupies an important position in plant growth. Potassium reportedly enhances uptake and assimilation of nitrogen and upregulates antioxidant metabolism. Supplementation of potassium lowers Na/K ratio concomitant to accumulation of greater potassium and can be used to counteract water and salinity stress-induced changes to some extent. Upregulation of the antioxidant system by application of potassium can also be exploited for food, pharmacognostic and medicinal purposes.

IT-3

Development of nutritional rich banana using transgenic and genome editing approaches

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Vitamin A micronutrient deficiency (VAD) is the leading cause of preventable blindness, growth retardation and decreased immunity. It is a major health issue, especially in South-East Asian and African countries. The β-carotene is known as the main precursor for vitamin A biosynthesis in vegetarian diets of human beings. In plants, this precursor is synthesised by the carotenoid biosynthesis pathway. We aimed at enhancing β-carotene in banana by using gain-of-function (transgenic) and loss-of-function (genome editing) approaches. Two necessary enzymatic steps regulated by 1-deoxyxylulose-5-phosphate synthase (DXS) and lycopene epsilon-cyclase (LCY-ε) were identified for genetic engineering in the banana carotenoid biosynthesis pathway. DXS provides the substrate flux in the carotenoid biosynthesis pathway, whereas LCY-ε acts at branching point and diverts lycopene towards α-carotene. Our study revealed the best overexpressing line showed more than 20-fold higher content of β-carotene compared to control in banana fruits. Besides, targeted gene editing was established in banana by editing of *phytoene desaturase* (*PDS*) gene through CRISPR/Cas9 approach, and subsequently, implemented for mutation of *LCY-ε* gene in the banana genome. The results support that the loss-of-function (genome editing) and gain-of-function (overexpression) can be used as suitable approaches for nutritional improvement of banana.

IT-4

Post Covid Management

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IT-5

New Innovations in Biomedical Research-What it means for Scientists & the common man

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Biomedical Research has sky-rocketed in 2020, specifically in the on-going Covid19 pandemic. The aim of this talk is to introduce students and researchers to new innovations that have had an impact on human welfare. The list of innovations is neither exhaustive nor exclusive, rather it is representative of the recasting of public health and medical science likely to commence in this decade starting 2021.There is also a glimpse of exciting new tools like artificial intelligence and possible future careers in biomedical research that will increase understanding of disease and improve the search for effective therapeutics, while reducing reliance on animal testing. The aspect of the legal regulation of new biomedical research technologies will also be highlighted.

IT-6

Stability Analysis of Signal Peptide Mutants of Thioredoxin (Trx)

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Recombinant thioredoxin with N-terminus malE and pelB signal sequences were studied with respect to their stability against proteolytic digestion and different Guanidine concentrations via thermal shift assay (TSA). Results were compared with wild type thioredoxin (wtTrx) without a signal sequence and its signal peptide mutants. Proteolysis of recombinant proteins results in rapid digestion of the signal peptide, suggesting that it is accessible to protease and has only transient interactions with the rest of the protein in the native state. TSA in both the cases suggests reduced stability for recombinant proteins. These studies show that besides acting as address labels, signal sequences can modulate protein stability and aggregation in a sequence dependent manner.

IT-7

Nanotechnology: A Promising technology in Sustainable Agriculture

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Agriculture serves as a backbone for the developing countries. Today, ever rising urbanization, unpredictable climatic change, rapidly increasing population resulted in decline in agricultural productivity. To overcome such problems, Nanobiotechnology could revolutionize food industry and agriculture. Nanotechnology can play a vital role in global food security, food production and food safety. Green synthesis of nanomaterials, introduced advanced techniques- precision farming techniques, detection and control of plant diseases, enhancing the ability of plants to absorb nutrients. Nanomaterials are the ultrafine particles that consist size between 1-100nm. Nanomaterials are synthesized by three methods- physical, chemical and biological. However, physical and chemical methods provides high yield and better sized nanoparticles. But they are non-eco-friendly

and produce toxic waste. Biosynthesized nanoparticles with different metals like Ag, Au, Zn, Cu,Ti, etc are non-toxic, eco-friendly and cost efficient. Biosynthesized nanoparticles holds a remarkable perspective in agriculture field with advanced technology, innovative methods and labor saving practices. It also fulfils the demand of food in efficient, non-toxic and cost effective way.

Keyword: Nanotechnology, Agriculture, Biosynthesis

IT-8

Microbial Solubilization of Metals from Electronic waste (E-waste)

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It is believed that biotechnology is one of the most promising technologies in metallurgical processing. For many years, bioleaching has been used for the solubilization of metals from ores. Bioleaching is useful for treating ores with low concentrations of metals; it is also simple and cheap to operate. It has been successfully applied toward the leaching of metals from ores, though it has not yet been commercially applied toward the recovery of metals from printed circuit boards (PCB). Several authors have recently published studies on the bioleaching of metals from electronic waste. The aim of the study was to formulate microbial consortium for solubilization of metals from waste PCB and evaluate its efficacy. For this purpose, a microbial consortium from bauxite and pyrite ore samples was obtained using a simple 'top down' approach. Essentially, printed circuit boards (PCB) were obtained and used as representative samples of e-waste. Various concentrations (1–5%) of PCB powder were subjected to bioleaching, and the effects on metal solubilization, changes in pH and concentration of ferrous iron produced were assessed. It was observed that a maximum of 96.93% Cu and 93.33% Zn was solubilized by microbial consortium from 10 g/L of PCB powder, whereas only 10.26% Ni was solubilized from 30 g/L of PCB powder. For lead, only 0.58% solubilization was achieved from 20 g/L of PCB powder. An analysis of the precipitate formed during bioleaching using scanning electron microscopy with energy dispersive X_ray analysis revealed the presence of Tin (59.96%), Cu (23.97%), Pb (9.30%) and Fe (5.92%).

IT-9

Animal Models of Tuberculosis

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Tuberculosis (TB) remain a leading cause of death globally among among infectious diseases that has killed more number of people than any other infectious diseases. It was Robert Koch who recognized the spectrum of pathology of tuberculosis (TB) in different animal species. The examination of clinical specimens from infected humans and animals confirmed the variable patterns of pathological reactions in different animal species. Guinea pigs are innately susceptible while humans, mice and rabbits show different level of resistance depending upon their genotype. The studies of TB in laboratory animals like mice, rabbits and guinea pigs have significantly increased the understanding of the

aetiology,viurulence, and pathogenesis of the disease. By introducing less than five virulence organisms into guinea pigs by the respiratory route can produce lung lesions, bacteraemia and fatal diseases, which has helped the extrapolation of results of such experiments to humans beings. The similarities in the course of course of clinical infection between guinea pigs and humans allow us to model different models of TB and to evaluate the protective efficacy of candidate in such systems. The only limitation of this model is a dearth of immunogical reagents required for the qualitative and quantitative evaluation of the immune responses, special reference to cytokines and cell phenotypes. Further limitation is the higher cost of the guinea pigs as compared with the mice. The rabbit is relatively resistant to M TB infection, however following infection with virulent *Mycobacterium bovis,* the rabbit produces pulmonary cavities like humans. The rabbit model, however, is also limited by the lack of immunological reagents. Mice are the animal choice of studying the immunology of Mycobacterial infections and contributed much to our current understanding of the roles of various immunological mechanisms of resistance. The resistance of mice to the development of classic TB disease, however, represents a significant disadvantage to the mouse model. Although non-human primates are closely related to humans, owing to high cost and handing difficulties they have not been exploited to a large extent. As all existing animal models fall to mimic the human disease perfectly, efforts should be focused on the development of the non-human primate (s) as the alternative animal model for TB.

IT-10

Challenges and opportunities to develop antiCoVID19 drugs

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SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2), associated with Corona Virus Disease 2019 (COVID-19) coined by World health organization, belongs to a family of retroviruses containing single stranded RNA (ssRNA) as its genetic material. This virus is a member of Betacoronaviruses. The virus' molecular dynamics are necessary in the wake of human-human transmissions globally with rise in rate. As the viral genome expresses more human-biased mutations, the coronavirus disease 2019 continues to infect millions of people, with the available detection kits limiting the numbers detected out of the population. Understanding the molecular basis of the virus through bioinformatics would speed up the viral diagnostics, management and vaccine generation. The knowledge about this virus is scattered and requires a consolidated flow on thematic understanding in order to ensue further build up towards curbing the disease. The structure and function of the virus, genome and revealed mutations are critical in directing the SARS-CoV-2 virus and understanding of the disease. Though some vaccines have recently been developed and their applications have been started worldwide, yet the quest for search of the efficacious, safe and cost effective antiCoVID agents is continued. The specific and sensitive tools/devices are to be developed for early and accurate detection of SARS CoV2. Repurposing of the drugs is another potential area which could be explored to design and develop virus specific antiCoVID19 agents to cure the disease.
Here, we analyse and review published knowledge on the virus in regards to the molecular specs and evolutionary relationships of the virus.

IT-11
'Vaccine Production' need of today's world
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About 80% of world population suffers from various types of illness. In lieu of human welfare, vaccine production and immunization is the most important application. The first experimentation in immunization was done by a French Scientist Louis Pasteur in 1885 and he treated a patient of rabies, by extracting fluid from the spinal cord of rabid dog, which stimulated the production of antibodies in the patient. The science and application of vaccine technology has made significant progress during 1950-1970 and considered as Golden period of vaccine development. The human body is made in such a manner that it responds to foreign body by developing resistance in three ways:

1) Immediate destruction of parasite on surface layers by certain enzymes or lysozymes.
2) By immune response developed immediately known as hypersensitivity.
3) Long term immune response.

WHO expect that there should be research for eradiation of the contagious diseases, but most of biotechnological companies are working on medical product to cure the diseases. At present various vaccines are given at different age to the children to overcome some deadly diseases viz chicken pox, pertussis, hepatitis etc. A number of difficulties arise with conventional vaccine system, so it has now become very important to develop new vaccine with newer approach like production of vaccine by genetically engineered organism, synthetic peptides as vaccines, mini cells and DNA vaccine. Vaccine design has become more scientific as it takes care of present requirements. Now a day with the advent of recombinant DNA and monoclonal technology coupled with recent advances in immunology has opened a new era into the production of vaccine.

Keywords: - Vaccine, Antibody, virus, immunization.

IT-12
Stress Management Diet During Coronaphobia
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Corona phobia, during the pandemic Covid-19, fear, anxieties, and worries have been the major psychological consequences, which have been reported as functional impaired leading to hopelessness, unemployment, suicidal ideation and fear of contacting Covid-19 virus become the most searched topic in a Google search history. The origin of mysterious virus and the associated and prolonged uncertainties gave rise to the ***fear to the unknown***, considered fundamental fear of human. Such an attack of uncertainty on our fragile life and temporal stability lead to outburst of irrational and negative emotions like panic and phobia. This may lead to stress.

As the body's stress response system is not designed to be constantly activated. The impact of this on health can be significant. Our nervous system and adrenal glands send signals to the rest of the body to prepare it for a physical response. This hard wired fight or flight reaction gives negative impact on our health. Stress management can be a powerful tool for the wellness. One of the good solutions is to eat stress fighting and reducing nutrients through food with a balanced diet that improves brain functioning, effects immune system, lowers blood pressure and reduce toxins from the body. So the overview of stress relieving food in your diet should be Complex Carbohydrates,

Proteins, Vitamin-C, Vitamin-B, Magnesium, Selenium, and Essential Fatty Acids. A well balanced nutrition diet and a good mood food will boost our body to cope up with stress.

Keywords: Corona phobia, Stress, Anxiety, Depression, Stress Management, Diet.

IT-13

ANTARCTICA: THE LAST SENTINEL OF FRESHWATER FOR THE WORLD?

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In today's world, the need for freshwater, is increasing day by day. At the same time freshwater sources are depleting at a faster rate than ever. Added to the above, due to climate change, rains have become unpredictable. A large amount of rain water, in the form of surface runoff, flows to the oceans. Thus all estimates say that, in near future, more than 40% of human population globally will not have access to freshwater for their consumption. Already wars for water between the countries are flaring up. It may be Israel and its neighbors, Indo-Bangladesh, Indo-Pakistan, Indo-china. There are a large number of litigations between countries for water. Under the circumstances entire world is looking at Antarctica as last source of freshwater for the world. It is well known that the Antarctica is seventh continent on lone biologically inhabited our planet earth, is known to be coldest, windiest, mysterious, and sensuous and least inhabited precious part our world belonging to human kind, has more than 90% ice and 75% of freshwater sources of the world.

The paper discusses about the present status and future strategies to be adopted not only to conserve, but also to be a major source of freshwater supplier to the world in the years to come.

IT-14

Ethnoveterinary Practices For Dermal Disorders Among Cattle In Gwalior (M.P.)

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Background: Our earth is full of biodiversity. Each individual of this earth has its own importance. Cattle are the one of the crucial members of our society as they are the main source of milk and other dairy products. Thus, it is our duty that we should take special care of our livestock. Although there are several health issues which hamper the well-being of cattle, but dermal disorders are quite common among them, which severely affects their normal life. Ethnoveterinary is a word used for the use of traditional medicines for the treatment of animals. The present work aimed to get information about these traditional medicines which could be used for curing dermal disorders of cattle.

Methodology: The present work had been carried out in selected villages and dairy spots of Gwalior region of Madhya Pradesh by means of frequent visits and survey by set proforma about their disorder, symptoms, effect and treatment through traditional herbal recipes.

Conclusion: It had been reported that there were many medicinal plants like Allium cepa, Azadirachta indica, Citrus limona, Lannea coromandelica, Capparis decidua, etc. which were widely used by the villagers and folk men of the area for the treatment of skin problems of their domestic cattle. These curatives were found to be highly effective and safe for the cattle. They could be better alternative against harmful and costly allopathic medicines.

IT-15

Nanofertilizers for sustainable agriculture: an influence of Zinc oxide nanoparticles

Madhulika Bhagat

Nanotechnology is an interdisciplinary promising research field, opening a vast number of opportunities in fields like medicine, pharmaceuticals, electronics, and agriculture. The term nanomaterials are generally used to describe the materials having a size between 1 and 100 nm. The small size and enormous surface area of such characteristics give unique properties for nanomaterials like optical, physical, and biological. Recently, a wide range of nanotechnology applications has been intensively studied in the agriculture research sector developing practices at both academic and industrial levels. In fact, nanotechnology has the potential to improve the entire current agricultural and food industry, by developing new tools for plant disease treatments, pathogen detection, and improving the ability of plants to absorb nutrients. Furthermore, new nanofertilizers are constantly being explored for overall increase in efficacy, bioavailability and decrease in fertilizer loss to the surrounding environment augmenting the increase in yield during mineral management.

Zinc (Zn) deficiency is one among the most widespread micronutrient disorders in crops, and application of ZnONPs is anticipated to provide zinc to plants effectively due to their small size, easy solubility, and diffusible nature that renders for rapid and complete absorption/uptake by the plant catering the nutritional needs and deficiencies in the crop plant. Here, the effect of the ZnONPs would be discussed in the important crops of Jammu and Kashmir i.e., corms of *Crocus sativus* (saffron) and *Zea mays* L (maize) plants.

Keywords: Zincoxide nanoparticles, nanofertilizers, *Crocus sativus*, *Zea mays* L

IT-16

Nanotherapeutics For Acetaminophen Induced Hepatotoxicity In Rats

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Nanomedicine, an emerging form of therapy focuses on alternative drug delivery and improvement of the treatment efficacy while reducing detrimental side effects to normal tissues. Gold nanoparticles (AuNPs) and Silver nanoparticles (AgNPs) have widely been used in medical applications like bio-imaging, drug delivery and photonics due to their amazing physical and chemical properties. Present study was designed to examine the protective potential of AuNPs and AgNPs on Acetaminophen (APAP) induced hepatotoxicity in rats. Female albino rats (Wistar strain) were divided into various groups of six animals each. Animals were intoxicated with APAP at a dose of 20mg/kg p.o (5 days/week for 4 weeks). AuNPs and AgNPs therapy was given at a dose of 100 µg/kg p.o. and silymarin at a dose of 50 mg/kg p.o. for 2 days/week for 4 weeks. APAP induced a significant elevation in serum transaminases and alkaline phosphatase, which indicated the hepatic damage. Activities of major antioxidant enzymes and GSH cycle enzymes were significantly inhibited by APAP toxicity. APAP intoxication was also found to induce DNA damage and ultrastructural alterations. Rats treated with AuNPs and AgNPs

showed significant restoration of all blood and tissue biochemical variables towards normal. Both, AuNPs and AgNPs demonstrated a remarkable protective activity against APAP induced adverse effects as judged from above parameters. However AuNPs were found more effective than AgNPs. Thus it is concluded that Both, AuNPs and AgNPs demonstrated a remarkable protective activity against APAP induced adverse effects as judged from the serum marker enzymes and antioxidant levels in liver tissues. However AuNPs were found more effective than AgNPs showed potential protective role in combating acetaminophen induced hepatic damage, thus can be used in the development of therapeutic drug against hepatic diseases, however further preclinical and clinical studies are needed.

Key Words: Acetaminophen, Toxicity, Gold nanoparticles, oxidative stress, rats

IT-17

Role of microbes in sustaining food security

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Population on the world is increasing day by day and it is forecasted that by 2050, the human population worldwide will be > 9 billion. It is therefore a fact that there is a need of more than 50% increase in the current food production in order to feed the projected human population. Food production is greatly hampered by various biotic and abiotic challenges that the crops face during their growth period. Microbes have unknowingly been partnered to all kinds of plants and helped to acquire nutrients and safeguard the plants from various environmental threats. Agricultural practices such as continuous mono-cropping has made the crops vulnerable to increased number of pests and diseases jeopardizing food security. Novel strategies are being developed to meet these challenges by increasing focus on belowground plant characteristics. Belowground traits vary greatly between species and individuals and with environmental conditions but yet to be thoroughly explored in order to develop effective tools to manage the emerging threats to crop yield. So, it is highly important to understand how the root exudates and other belowground traits help in shaping the microbiome that facilitates durable crop production. Microbiologists are investigating to understand and manipulate soil microbiome structure in order to increase crop yields and soil health. Therefore, understanding soil microbiome diversity and function is essential to harness its function for better and sustainable crop production. The impact of healthy microbiome when harnessed from specific crop rhizosphere and applied to plants under stressful conditions is believed to solve a number of issues associated with crop health management and productivity.

IT-18

Probiotics: Good Microbes for Health Benefits and Business Opportunity

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Probiotics are live microorganism, provides several health benefits to the host. Health benefits have mainly been demonstrated for specific probiotic strains of the following genera: Lactobacillus, Bifidobacterium, Saccharomyces, Enterococcus, Streptococcus,

Pediococcus, Leuconostoc and Bacillus. The vast majority of probiotics that are used today are generally regarded as safe and beneficial for healthy individuals.
The probiotics alone or in combination of prebiotic referred as "Synbiotic" is helpful to reinforce our immune system. Today's Probiotics become a popular approach for managing digestive and immune health. It is also recommended by various medical professionals due to its effective therapeutic interventions. Probiotics helpful in many ways such as boosting the immune system, inhibition of pathogenic organism, prevention of cancer, reduction of inflammatory bowel disease, reducing cholesterol level, acute diarrhea etc.

Probiotic also helps to boost our economy as its market size growing day by day due to increasing consumer awareness about healthy diets. During pandemic people are very conscious about their health and immunity. Probiotics market is projected to grow at a CAGR of 7.0%, to reach USD 69.3 billion by 2023. The growth of the market is driven by several factors such as health benefits associated with probiotic-fortified foods and technological advancements in probiotic products.
During pandemic the whole world has been facing the huge economic loss and lots of people have been lost their jobs. In this situation probiotics may provides business opportunity to several new entrepreneurs. Therefore Probiotics not only the beneficial for health but but also generates new business opportunity in the filed of Lifescienes.
Keywords: Probiotic, Prebiotic, synbiotic, therapeutic, Market.

IT-19

Reverse Vaccinology: Bridging The Gaps In Vaccine Design And Development

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Conventional approach of vaccine development relies on Pasteur's principles: "isolate, inactivate and inject" the causative microorganism. This led to the development of killed, live attenuated and subunit vaccines. Recent technological breakthroughs have amplified the potential of the vaccines developed by Pasteur's principles by making it easier to manufacture. The availability of genomic sequences has allowed us to use computers to search the entire genetic repertoire for protective antigens, thus increasing by several orders of magnitude the number of antigens available for vaccine development. Because this approach to vaccine discovery starts with the analysis of the information contained in a computer instead of with growing pathogens, it has been named 'reverse vaccinology'. Reverse vaccinology is now being applied to many pathogens, and thus far it has been successful in every case in providing new, valid antigens for vaccine design. It is also desired to develop an effective and safe vaccine using reverse vaccinology approach towards the SARS-CoV-2 coronavirus to combat the emerging COVID-19 pandemic. The whole virus, as well as the spike (S) protein, nucleocapsid (N) protein, and membrane (M) protein, have been tested for vaccine development against SARS and MERS. The lessons learned and the technologies developed in this area, will also be applicable to other diseases where strategies to either induce or control cellular immune responses are of potential clinical benefit.

ORAL PRESENTATIONS

OP-1

Studies on different methods of nutrient management and mulching practices on productivity of Tomato (lycopersicon esculemtum Mill)

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The nutrient management and mulching practices on tomato cultivation has increased in last decade. In India due to the benefits of maintain favorable soil temperature, reduced weed growth, moisture conservation and higher crop yields. A field experiment was conducted on tomato (Lycopersicon esculentum L.) at farm of Fruit research Station Intkhedi Bhopal which comes under Rajmata Krishi Vishwavidyalaya Gwalior (M.P) during (October -April) in 2017-18 & 2018-19, in a factorial randomized complete block design with three replications. Treatments consisted of nutrient management by different methods of nutrient management and mulching practices (black colour HDPE inorganic plastic mulch), organic mulches of rice straw and soybean straw and control without mulch and farmers practice of nutrient management. Results of the study indicated highest values of plant height, number of flowers per cluster, SPAD values, fruit weight, yield and soil temperature were observed (Black colour Plastic Mulch with100% RDF (100% PK + 50% N basal dose 50% N in 20 & 40 DAT by top dressing) followed by rice sraw mulch and soybean straw lowest found in open bed and farmer practice control. Marketable yield increased by 99.62 % in black colour mulch, 82.82% in organic rice straw mulch 78.47 % organic Soyabean straw as compared to crop over control.

OP-2

GC-MS analysis of *Uraria picta* Desv. seed oil for identification of phytochemical compounds of biological significance

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Background

Uraria picta Desv., commonly known as 'Prishnaparni', is one of Dashmool species. Basic dashmool ingredients are utilized in more than hundreds of ayurvedic formulations including 'Dashmoolarishta', an established Ayurvedic drug of Indian system of medicine used for treating general fatigue, oral sores and several gynecological problems. Several phytocompounds have been reported from this species. However, GC-MS analysis of *U. picta* seed oil was carried out first time to identify the phytochemical compounds of biological significance.

Methods and Preliminary results

This study was designed to determine the phytocomponents in seed oil of *U. picta*. Seeds were collected in the month of December from forest areas of MP and dried in shade and then grinded to get the powdered form which was used for extraction of oil using petroleum ether as solvent in soxhlet apparatus. GC-MS analysis of seed oil was peformed using a Perkin Elmer, USA and Model - Auto system XL with Turbo Mass. Compounds were separated on PE-5MS 30m x 0.250mm x 0.250µm column. Mass spectrums were interpreted using the database of NIST.

The analysis revealed the presence of 11 major compounds named as N - Hexadecanoic acid (RT – 19.62, 9.6%), 9,12- Octadecadienoic acid methyl ester (RT – 20.82, 1.63%), 9 - Octadecanoic acid methyl ester (RT – 20.88, 1.46%), 9,12 - Octadecadienoic acid (RT – 21.24, 8.55%), 9-Octadecenal (RT – 21.30, 19.25%), Octadecanoic acid (RT – 21.48, 2.61%), β-sitosterol acetate (RT – 27.19, 5.84%), γ – Tocopherol (RT- 29.53, 2.72%), 5,6-dihydro, 5,6-dihydroxy β, β-Carotene (RT – 32.59, 4.83%), 3,5-dedihydro Stigmastan-6, 22-diene (RT – 33.07, 11.56%) and β- sitosterol (RT – 34.37, 28.08%). All investigated compounds were reported to contain biological activities.

Preliminary conclusion

From the results, it is evident that *U. picta seed oil* contains various bioactive compounds which justify the use of this plant in treatment of various ailments by traditional practitioners as well as in preparation of ayurvedic formulations by pharma industries.

OP-3

Micropropagation of Plumbago zeylanica -a valuable medicinal plant through high frequency axillary shoot proliferation

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Plumbago zeylanica Linn. (Plumbaginaceae) (a perennial herb) is one of the well known Ayurvedic medicines. It is commonly known as chitramula and chitrak. The roots of Plumbago zeylanica contain Plumbagin (a yellow pigment) used to treat numerous chronic diseases. It is found in various parts of India, including West Bengal, Uttar Pradesh and Southern India. Plumbago zeylanica is clinically significant for treatment of various diseases viz., inflammation, leprosy, scabies, ringworm, dermatitis, ulcer, haemorrhoid, hookworm, gonorrhea, syphilis, tuberculosis, rheumatic, pain, swelling and wound healing. It is mostly propagated through seeds or cuttings. In vitro proliferation can be effectively exploited for mass multiplication of plants by using axillary buds. In the present study, we have successfully established an efficient protocol for in vitro culture establishment, multiple shoot production through nodal segments and rooting of regenerated shoots to achieve an optimized plant regeneration system. Axillary buds were inoculated on Murashige and Skoog's (MS) medium supplemented with different concentrations of BA (0.5, 1 and 2 mg l-1) and maximum bud break (70-80 %) was obtained on medium containing 1 mg l-1 Benzyl adenine (BA). Shoots obtained from axillary bud break were used to produce multiple shoots on MS medium supplemented with 1 mg l-1 BA, 0.5 mg l-1 IBA (Indole-3-butyric acid) with or without 2 mg l-1 Adenine sulphate and maximum (6-7) shoots were obtained on medium containing 1 mg l-1 BA, 0.5 mg l-1 IBA with 2 mg l-1 Adenine sulphate. The individual shoots were rooted on ½ strength of MS medium with 0.5 mg l-1 NAA (Napthalene acetic acid). Rooted plants were successfully hardened in controlled mist chamber conditions. This protocol can be used for large scale micropropagation and conservation purposes.

Key words: Axillary bud, in vitro, micropropagation, Plumbago zeylanica.

OP-4

Biodegradable Plastic From Polymers of Tridax procumbens

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Plastics are non-degradable polymer derived from fossil resources; its wastage remains longer periods of time in the environment and leading to big environmental challenge. Bio-plastics are best alternatives to overcome this, having advantage of lower carbon footprint and faster biodegradability. The aim of the current study is to develop biodegradable plastic film from leaves of Tridax procumbens (T.procumbens) and accomplish bio-plastic at affordable price to the society. T.procumbens is a widely spread common weed grows in open places, coarse texture soils of tropical regions, suuny dry localities, fields, waste areas, meadows and dunes. The leaves (T.procumbens) contains phytochemical constituents of 39% carbohydrates, 17% fibre, 26% protein and is rich in polymer. It is used for synthesis of biodegradable plastic. The films were prepared with different composition (10, 20, 30 ml) of T.procumbens extract, plasticizers like PVA, glycerol, sorbitol and citric acid and a control was used without the extract. To obtain better quality of film the various proportion mixtures of plasticizers were added and checked. The film was standardized by composition of 30 ml of extract and 2g of PVA, 0.5ml glycerol and 0.5g of sorbitol. After the synthesis of the film, the analysis like water absorption test and biodegradability test by total organic carbon test were carried out. Based on the results obtained, it was observed that the film was biodegradable as it contains more organic matter than polythene and absorbs water since it is made of biopolymers. This eco-friendly plastic can be used in medical field application as disposable gloves, bedsheets and gowns also.
Keywords: *Tridax procumbens*, Bioplastic, degradability, polymer.

OP-5

Incineration and non- incineration technique with reference Bio medical waste disposal method

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Biomedical waste is special category of waste and need special attention for disposal. It contains infectious, non-infectious and radioactive waste. It poses serious threats to environmental health and requires specific treatment and management prior to its safe disposal. There is various available method for biomedical disposal out of which incineration technology is most common among the developing countries. Incineration techniques work at high temperature and converts waste into ash. This ash contains hazardous gases like poly chlorinated dibenzenzo-p-dioxin (PCDD) and dibenzofurans (FS) which in turn pose burden over environment and finally human being. In present study we discuss modern waste disposal techniques that are environmental friendly, economically cheap and useful. Although no one technology offers a panacea to the problem of medical waste disposal but other alternative waste disposal technique can control pollution through incineration technique at some extent.
Keywords: medical waste disposal, incineration technique, environmental threat, safer side.

OP-6

Production and characterization of polyhydroxyalkanoates (bio-plastics) from domestic kitchen waste using bacteria isolated from the soil.

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Background: Conventional petro based plastics which are part and parcel of human life are becoming a menace due to its non-degradability and possibility of it being replaced with Polyhydroxyalkanoates (PHAs) which are biodegradable, environment friendly and biocompatible thermoplastics is not remote. PHAs are a fascinating group of bio-polyesters stored within the cytoplasm of numerous bacterial cells as energy and carbon reserves. PHAs signify best promising biological substitute to certain conventional plastics which have wide range of applications in different industries such as biomedical sector, packaging, toners for printing and adhesives for coating etc.
Methods and Preliminary results: PHAs producing bacterial strains were screened by Sudan black B staining and confirmed by Nile blue A staining. Out of forty bacterial strains showing positive results, six bacterial strains exhibited comparatively higher PHAs production. The highest PHAs producing bacterial strain was identified using 16s rRNA sequencing. Optimization of process parameters was performed by using one factor at a time (OFAT) approach. The isolated bacterium was able to synthesize PHAs when various agro-industrial wastes such as domestic kitchen waste, mixed fruit pulp, sugarcane molasses and waste flour from bread factory were screened as a carbon substrate in the growth medium.
Preliminary conclusion: The results showed accumulation of 44.5% PHAs of cell dry weight using domestic kitchen waste as carbon substrate. The characterization of biopolymers was performed using FTIR and XRD analysis. Further the PHA film produced was subjected to soil burial method and the results revealed significant degradation in 4 to 6 months. The commercial exploitation of results of this study may serve twin purposes of addressing the challenge of high production cost of PHAs being the major constraint in replacing petro based plastics as well as address the problem of disposal of recurring domestic kitchen waste and other agro-industrial waste.

OP-7

Rapid *in vitro* screening of beneficial plant microbial interactions

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Various biotic and abiotic factors are responsible for high mortality rates observed during the transfer of micro propagated plants form lab to field. Therefore, hardening and acclimatization are considered as essentials for efficient and successful micro propagation protocol. Commercial success of tissue culture based methods also depends on this. Microbial contamination is another biggest problem affecting success of any micropropagation. But in present study the microbial threat of tissue culture has been reversed by developing a methodology resulting in identifying the positive *in vitro* plant microbe interaction. In present work Plant growth promoting rhizobacteria (PGPR) isolated from the indigenous rhizospheric soils were co-cultured with micropropagated

plants and screened for their positive impact on *in vitro* shooting and rooting along with other PGRs and additives. Encouraging results like enhanced shoot multiplication and increased root vigour have been observed. This new strategy of *in vitro* co culture in plant tissue culture can helps in rapid screening and establishing positive plant–microbe interaction which can further help in acclimatization, field transfer of plants. Also it can be exploited for development of biofertilizers.

Keywords: Swertia chirayita; micropropagation; in vitro coculture; Biotization., PGPR

OP-8

MICROBIAL ENHANCED OIL RECOVERY (MOER)

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Even after primary and secondary production, 2/3rd of the oil ever found still belongs to the ground. On the other hand the depletion of oil resources and the increasing global energy demand highlights the need for the development of oil recovery technologies. Enhanced oil recovery (EOR) is a tertiary recovery process involving application of different thermal, microbial and chemical processes to extract additional 7-15% oil. Microbial enhanced oil recovery (MOER) is an attractive, alternative approach that is purported to increase oil recovery and potentially recover upto 50% of the residual oil. Compared with other EORs, MEOR can be an economically as well as more environmentally friendly approach. MOER basically refers to the manipulation of the microbial environments existing in oil reservoirs to improve the recovery of oil entrapped in porous media, simultaneously increasing economic profits. MEOR can overcome the main hindrances in the path of efficient oil recovery, these are low reservoir permeability, high viscosity of the crude oil, and high oil-water interfacial tensions, which in turn results in high capillary forces retaining the oil within the reservoir.

The process of MEOR results in some beneficial effects such as formation of stable oil-water emulsions, clogging high permeable zones, and reduced interfacial tension.

Also, micro-organisms can synthesize useful products (which are biodegradable and have low toxicity) by fermenting substrates or raw materials. Thus, MEOR can potentially replace chemical enhanced oil recovery (CEOR) which is a very pricey method. Continuous researches and successful applications establish the fact that MEOR can be viewed as a potent technology. MEOR might be one of the most promising future research areas and might as well help to recover the 377 billion barrels of oil that haven't been recovered yet.

OP-9

Isolation of metal tolerant bacteria from soap industrial effluent soil

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Heavy metals are ubiquitous environmental contaminants in an industrialized society due to the harmful physiological effect on human. The aim of the present study was to isolate the metal tolerant bacteria from the soap industrial effluent soil to explore the microbes for metal decontamination purpose. The sample was collected from Gandhi soap industry, Namakkal District. Metal content was determined by ICP-OES (Inductively Coupled Plasma Optimal Emission Spectrometry) method and it revealed, the soil sample contain elevated amount of Pb (0.130 mg/l), Mg (3.689mg/l), Fe (0.562mg/l). A total of eight

bacterial strains (PS1 to PS8) were isolated among them PS1 shows high tolerant to all the selected metals (Pb, Mg & Fe). Metal decontamination study was carried out in the laboratory condition by flask method and the result found that the strain PS1 reduced the metal content Pb, Mg and Fe to 0.046 mg/l, 1.05 mg/l, 0.177mg/l respectively. After bioremediation process, FT-IR spectrum of bacteria has been analyzed and the result reflects several peaks of N-H bend, Amines and Alkynes groups are involved in the binding of metals. Hence the study suggests that, the bacteria can effectively be utilized as a bioremedial source to remove metal ions in the industrial wastewater and effluent soil in near future.

Key words: Soap industry, ICP-OES, FT-IR

OP-10

Prevalence of Antibiotic Resistant Genes Among Gram Negative Clinical Isolates

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Increasing antibiotic resistance is a threat worldwide. Deep studies have to be done for correct and appropriate usage of antibiotics for treating infections efficiently and to curtail the spread of resistance. Hence, this study is aimed at understanding the prevalence of antibiotic resistance genes among 35 gram-negative bacterial isolates. By performing biochemical tests, the isolates were identified to be Escherichia coli (n=15), Klebsiella oxytoca (n=3), Klebsiella pneumoniae (n=5), Proteus mirabilis (n=4), Proteus vulgaris (n=1) and Pseudomonas aeruginosa (n=7). Antibiotic Susceptibility Tests showed that most Escherichia coli isolates were resistant to ampicillin, levofloxacin and cefazolin. Ampicillin resistance was found in all of Klebsiella oxytoca, Klebsiella pneumoniae and Proteus mirabilis isolates. All Proteus mirabilis isolates were resistant to ciprofloxacin and co-trimoxazole. Pseudomonas aeruginosa showed maximum resistance to gentamycin and tobramycin. All 35 isolates were sensitive to amikacin, imipenem and meropenem. Polymerase Chain Reaction showed that AmpC and SHV genes were predominant in Escherichia coli and Klebsiella species respectively. Among Proteus mirabilis and Pseudomonas aeruginosa, IntI gene was more prevailing. NDM1 gene was not detected in any of the isolates. This study also showed the prevalence of isolates resistant to multiple drugs due to the co-existence of resistant genes. Therefore, control of spread of infections, routine study in this field and proper guidelines for prescribing antibiotics is very necessary.

Keywords: Antibiotic resistance, ESBL, MBL, AmpC, integrons.

OP-11

Exploration of native lignocellulolytic actinobacteria and their evaluation as biodegrader on water hyacinth biomass

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The investigation was aimed to isolate and identify the native lignocellulose biodegrader actinobacteria for biological degradation of water hyacinth biomass and convert it into nutrient rich compost. Total 40 actinobacterial cultures were isolated from agricultural fields as well as dumping site and screened for cellulose degradation ability on carboxy methyl cellulose (CMC), three actinobacterial isolates were selected for further studies

based on their highest activity on CMC. The solubilization index (SI) by actinobacterial cultures was ranged from 2.17 to 3.33. Based on morphological, cultural, biochemical and molecular characterization, selected efficient actinobacterial isolates M 2, M 10 and M 16 were found as Streptomyces sp. AAUBD M-2, Streptomyces rochei AAUBD M-10, and Streptomyces chartreusis AAUBD M-16, respectively. Sequencing of 16S rDNA was carried out and the sequences were submitted in NCBI gene bank (Accession No: MN581484; MN581673 & MN582992).

The cellulose and lignin degradation efficiency of selected isolate were preliminary examined for cellulose degradation ability by filter paper degradation assay and lignin degradation by decolorization of lignin by flask assay, all three isolates were found effective for lignin and cellulose degradation in their respective flasks assay. All filter paper was degraded between 9 to 15 DAI. The best result obtained from the pot study was in treatment T4 which consists of actinobacterial consortium and cow dung. Treatment showed higher degradation with all desired characters like color change of degraded product, earthy sweet odour, compaction of mass, particle size reduction at 45 DAI with highest moisture content (48%), lower C:N ratio (14.2), with better nutrient content like nitrogen (1.90%), phosphorus (0.95%), potash (1.72%), organic carbon (27.0%).

Key words: Biodegradation, Actinobacteria, Water hyacinth, lignocellulolytic, compost

OP-12

Development of date palm seed incorporated Poliglusam/hydroxyapatite nanoconstruct for the repair of cranial size defect in albino rats

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Role of polymer nanocomposites has gained much vogue in the field of Bone tissue engineering in the recent past. In this context, a novel nanocomposite scaffold incorporating date seeds in poliglusam and hydroxyapatite nanoparticles matrix (Liu et al. 2014) has been synthesized via co-precipitation method at room temperature (Neves & Ph 2011). The ternary nanocomposite scaffold was investigated for its physicochemical, biocompatibility and cytotoxic performances. There exist considerable intermolecular interactions between the various components of the synthesized system as indicated by FTIR spectra. The AFM, XRD, TEM, and SEM studies demonstrated that the size and surface roughness of the proposed nanocomposite has decreased and increased, respectively relative to the binary nanocomposite composed of Poliglusam and hydroxyapatite only. In addition, the in vitro biomineralization analysis showed exceptional nucleation ability of the date seeds displaying superior apatite formation on the surface of the prepared scaffolds, referring a step towards possibility of making direct bond to the bone tissue in vivo (Huan & Chang 2009). Also the nanocomposite is shown to repair critical size defect created in the cranial bone of albino rats with about 92% gain in bone density in the defected region during the 8 weeks study time showcasing the potent candidature of novel date seeds/poliglusam- hydroxyapatite nanocomposite scaffold for bone tissue engineering applications.

Keywords: MTT assay, Co-precipitation, Ceramic, Hydroxyapatite, Tissue engineering

OP-13

Piperine encourages ROS mediated apoptosis in osteosarcoma MG-63 cells

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Background: Cancer remains the second most leading mortality worldwide and causes the severe public health issues. Cancer causes approximately 7.6 million deaths every year globally. Osteosarcoma has been one of the most common bone cancer that mainly affects children and young adolescents globally. It is more common in tall teenagers and in males. This cancer type can be seen in persons over the 60 years age and in patients who have undergone radiation treatment for cancer are disposed to developing osteosarcoma. Piperine (1-piperoylpeperdine), a nitrogenous pungent substance, is present in the fruits of black pepper (Piper nigrum Linn.) and long pepper (Piper longum Linn.). It possesses several pharmacological properties and has been extensively explored for its anti-cancerous activities.
Methods and Preliminary results: The anti-osteosarcoma and apoptotic potential of piperine was evaluated by MTT cell viability colorimetric assay, reactive oxygen species (ROS) generation analysis, nuclear fragmentation assay, mitochondrial membrane potential (MMP) depolarization assay, DNA fragmentation, and cell cycle analysis on osteosarcoma MG-63 cells.
Preliminary conclusion: The present findings has showed that piperine prevents MG-63 cells proliferation by decreasing cell viability, ROS augmentation, encouraging nuclear fragmentation, MMP decrease, DNA fragmentation and cell cycle arrest. These findings suggests the useful understanding into the significant anti-osteosarcoma potential of piperine and further more in vivo and clinical trial studies are also desired for its authentication and in the discovery of more efficient regimes against osteosarcoma.
Keywords: Piperine, osteosarcoma, apoptosis, ROS, MMP

OP-14

GI-An Important Tool of IPR

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Geographical indication (GI) is the one important tool of IPR .Unfortunately as other tools of IPR e.g.Patent,copyright,trademark ect. Which get so much attention but GI did not get so much attention.GI indicates qualities ,attributes, reputation associated with any particular geographic area or origin.GI show relation with country ,region or locality .In India registration of GI products are started in year 2003 and Darjelling tea is the first product,to get GI. But there is urgent need to make awareness at grass root level so that we can more and more GI registration.

OP-15

Comparative electrochemical behavior of stem and fruit of *Sarcostemma intermedium* as corrosion inhibitor in H_2SO_4 solutions

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The inhibition efficiency of stem and fruit of plant Sarcostemma intermedium for mild steel in H_2SO_4 solutions have been studied by mass loss and thermometric method. The results reveal that ehanolic extracts of stem and fruit of plant are potent corrosion inhibitors among which stem exhibit excellent inhibition efficacy against corrosion. The efficiency of corrosion inhibition increases with increasing inhibitor concentration. Inhibition efficiency was found optimal upto 86.61% for stem and can safely be used as non-toxic and non pollutant green inhibitor.

Keywords: Pithecellobium dulce, mild steel, corrosion, inhibition efficiency, Surface coverage.

OP-16

Evaluation of Different Extracts of Phyllanthus emblica Leaves for Anti-Dyslipidemic Effect in Albino Rats

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Background: Dyslipidemia, referred to as the abnormal lipid profile in blood is one of the independent risk factors of cardiovascular disease throughout the world. The mounting prevalence of dyslipidemia and the adverse effects associated with currently available synthetic hypolipidemic drugs has augmented the exploit of herbal medicine in the last decade as a safe and potent alternative strategy for managing dyslipidemia. The present study was therefore conducted to evaluate different extracts of Phyllanthus emblica (amla) leaves against dyslipidemia.

Methods and Preliminary results:

Different extracts of P. emblica leaves such as petroleum ether, ethanolic, hydro ethanolic and aqueous extracts were initially screened for anti-dyslipidemic effect at a dose level of 200 mg/kg body weight in triton WR-1339 (200 mg/kg i.p.) induced acute dyslipidemia rat model and ethanolic extract of P. emblica leaves (EPEL) was found to be the most potent among them. Later, EPEL was subjected to further anti-dyslipidemic evaluation at 50, 100 and 200 mg/kg body weight dose levels for a period of four weeks in cholesterol (500 mg/kg) and cholic acid (50 mg/kg) induced dyslipidemic rats. The treatment with EPEL significantly reversed the cholesterol and cholic acid induced abnormal serum and hepatic lipidemic parameters viz. total cholesterol (TC), triglycerides (TG), high density lipoprotein cholesterol (HDL-c), Non-HDL-c and atherogenic index in a dose dependent manner. While cholesterol and cholic acid administration induced rise in hepatic and renal toxicity markers such as alanine aminotransferase (ALT), aspartate amino transferase (AST), blood urea nitrogen (BUN) and creatinine, the levels were resolved by the EPEL treatment.

Preliminary conclusion

These findings thus indicated that ethanolic extract of P. emblica leaves is a safer and potent anti-dyslipidemic agent and can be suggested as an alternative strategy for the effective management of dyslipidemia.

OP-17

Faunal diversity in Jhunjhunu District: Challenges and Conservation

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India has considerable biodiversity that is under threat due to a decline in the habitat, fragmentation and hunting in some cases of mammals. In terrestrial areas animal species is declining due to loss of habitat by conversion of forest land in agriculture, cutting of trees and over grazing. In aquatic habitat, animal species are being declining due to diversion of water (ground and surface), resulting in the dry up of water bodies from saltation and pollution from insecticides, pesticides and chemicals.

The species extinction rate is of great concern. At least 76 mammal species are known to have gone extinct since 1500, with several others on the verge (IUCN). The extinction rate for the world's birds has been about 100 times higher than the background rate in the fossil record. More than 10% of all bird species remain threatened. According to IUCN (2009) 78 species of mammals has been extinct, of them 2 are extinct from wild, 188 species are critically endangered, 449 sp. are endangered and 505 are vulnerable. Like this about 137 bird sp. Is extinct, 192 critically endangered, 362 endangered and 669 vulnerable? Likewise 22 reptiles sp, has been vanished, 93 critically endangered, 150 sp. are endangered and 226 are vulnerable. In India the rate of extinction is more as compare to world scenario.

A study was carried out during 2014-2018 on faunal diversity of Jhunjhunu district in north-eastern Rajasthan. The methodology strategy of the study was done by counting though direct observation using of Olympus binoculars (8X40 DPS I) and Nikon camera for photography purpose. During the study total 142 species of birds, 9 species of reptiles and 11 species of mammals were identified. All these identified species were also reported in the great Indian Thar Desert. The mammalian diversity in the area is not as rich as in other other nearest districts of thar due surrounding populated and agricultural area. The reptile species as Varanus, Viper, Naja, Chameleon, and Bungarus were seen mostly in summer and rainy season. Results of the mammalian and reptilian diversity are sufficient to conclude that a less numbers and species of these animals are surviving here. Avian diversity index showed that Accipiteridae was the dominant family in study area followed by Columbidae, Alaudidae and Phasianidae. Among them, 46 species were resident species, 05 species were winter visitors and 01 species was occasionally visitor (*Eremopterix grisea*)and one is migratory. Five species of family Accipitridae are in endangered category. Vultures (*Gyps bengalensis* and *Neophron percnopterus*) along with few other bird species includes in risk category. Agricultural surrounding, availability of sewerage waste and water availability, which provide food and drinking water, increased the possibility of faunal diversity in the area.

Conservation of biodiversity has great role in maintenance of species richness and proper functioning of an ecosystem, so we need to make additional efforts to minimize the negative influence of other factors, such as over-exploitation, habitat loss and fragmentation, pollution, and the spread of invasive alien species. This way we can ensure that ecosystems are less vulnerable and more resilient to the increasing threat posed by climate change. Conservation of biodiversity and sustainable use of biological resources

across all sectors of the nation al economy, the society and the policy-making framework is a major challenge.

Key words: diversity, mammals, reptiles, desert, vulnerable, endangered, threatened, invasive.

OP-18

Reproduction performance in lawsone treated *Boisea coimbatorensis* (Rhophalidae)

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Insect belong to class Insecta and includes the most diverse species living on earth occupying all habitats. Protection of agricultural crops, stored grains, domesticated animals from insect pest and human population from the vectors is the prime goal of developing society. Many control measures are in practice to subsidize their effect as pest. Application of synthetic chemicals since ages is a common practice. Its adverse effects like bioaccumulation, development of resistance in insect pest population and persistence in nature has led to a resurgence of interest in development of biopesticides. In doing so many botanicals, natural compounds especially secondary metabolites from different plants, fungi ,lower invertebrates are screened to check their potency as insect control agents.

The present investigation was taken up with an objective to look for the effect of lawsone in Boisea coimbatorensis for practical purposes. With this in mind, different concentrations of Lawsone were topically applied to three groups (untreated males X treated females; untreated females X treated males ; treated males X treated females) along with control group(untreated males X untreated females) of 24-36 hours old adult Boisea to study reproduction performance. Its observed that higher doses of stress are harmful to organism while low doses stimulate certain biological processes. This biphasic response is commonly termed as "hormesis", and is seen in many insects. Here an attempt is made to understand the hormetic principle to improve commercial production of insects by nullify ramification of insecticide induced pest outbreaks or development of resistant pest. Moreover, such studies will also lead to better understanding in how insect respond to low doses of compounds which could be recommended in integrated insect management programme promoting reduction of use of synthetic insecticide. .

Key words: Insecta, insect pest, insecticides, bioaccumulation, Lawsone, Boisea coimbatorensis, reproduction performance biphasic response, hormesis

OP-19

Qualitative, Quantitative analysis and antimicrobial activities of *Annona squamosa*(L) twigs extracts against fish pathogen *Aeromonas hydrophila*.

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The present study has been to assess the qualitative screening of phytochemical constituents and quantitative study of total flavonoid content, total phenol content and *in-vitro* antioxidant activity; these were determined by aluminium chloride colorimetric method, Folin-ciocalteu method, and ferric reducing antioxidant power method

respectively. The anti-bacterial activity of aqueous *Annona squamosa* twig extracts of different concentration of (25%, 50%, 75% and 100%) against *Aeromonas hydrophila* was done by agar well diffusion methods. Qualitative study reported the presence of Steroids, Reducing sugar, Carbohydrate, Glycosides, Saponins, Flavanoids and Phenols. Quantitative investigation showed variable amounts of phytochemical constituents such as flavonoid, and phenol and antioxidant activity in the twigs extract. The most efficient inhibitory activity was examined in higher concentration (100%) of aqueous extract twig extracts of *Annona squamosa*

From the results, the present study indicated that *Annona squamosa* not only contains high amount of phytochemical compounds but showed higher medicinal value. *Annona squamosa* possess powerful antimicrobial activity against *Aeromonas hydrophila* and can be used in various ayurvedic treatments.

Keywords: *Annona squamosa,* phytochemical constituents, Quantitative, Qualitative analysis, *Aeromonas hydrophila*

OP-20

Protection of CCl_4 induced liver damage in rat by entrapped unripe fruit extract of *Aegle marmelos* in polymeric nanoparticles

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In current era, researchers are having main focus upon plants worldwide *Aegle marmelos* (L.) Corr. (*A.marmelos*) is a medicinal plant. It has lots of medicinal properties to cure many diseases. All part of *A. marmelos* have been utilized in remedy for its curative values such as anti- microbial activity, anti-inflammatory, anti-fungal activity and protective activity. The main aim of the present study is to investigate the effect of aqueous extract of entrapped unripe fruit extract of *A. marmelos* in polymeric nanopaticles (AM-PNPs) on carbon tetrachloride induced hepatotoxicity in albino wistar rats. Various blood and tissue biochemical parameters were altered after the administration of CCl_4. These parameters are significantly recovered with the therapy of *A. marmelos* aqueous extract and AM-PNPs at varient doses in a dose dependant manner. In conclusion, *A. marmelos* and AM-PNPs results showed hepatoprotective efficacy, hence from this study it is concluded that *A. marmelos* and AM-PNPs may able to protect the liver damage from CCl_4 induced toxicity, to be suggested from all the data.

Key words: Hepatoprotective; AM-PNPs*;* entrapped unripe fruit extract *Aegle marmelos* (L.) corr. in polymeric nanopaticles; Carbon tetrachloride.

OP-21

Role of biomarkers in neuroscience

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Background
Neurodegenerative diseases and neurological disorders are serious topics of concern in both medical and veterinary science. These conditions create confusion because of their complexities in pathogenesis and clinical manifestations. The diagnostic approach also demands challenging procedures by virtue of location of the brain in the bony calvarium and extremely diverse anatomical landmarks in the brain tissue which are not easily traceable. So any tool in terms of chemicals or biological indicators with specific targets and function in the brain tissue and that can help in early diagnosis and prognosis of different nervous maladies by measuring their over or under expression are of great help. Here is the importance of biomarkers in neuroscience.
Methods and preliminary results
Immunohistochemical procedures with specific proteins or antibodies against glial fibrillary acidic protein (GFAP) neuron specific enolase (NSE),microtubule associated proteins (MAP), neurofilament light polypeptides(NFL), toll like receptors (TLRs),high mobility group box protein (HMGB) and micro RNAs are some of the biomarkers tried in neurological disorders to investigate the pathophysiology and prognosis.
Preliminary conclusion
The neuronal and glial biomarkers have been used effectively in diagnosis and treatment of neurological conditions in man and animals though their efficacy in routine clinical practice remains an area for further research.

OP-22

Effect of melatonin and and photoperiod on surfactant protein D in lung of diabetic albino rat

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Melatonin is an endogenous neurohormone secreted by pineal gland of body besides pineal gland there are other extrapineal organs also which secrete this hormone eg. Retina, liver, kidney, digestive tract etc.pineal glands locate in brain part regulate circadian rhythms as well as secretion of melatonin hormone. Light exposure or duration of light and dark phase directly influences secretion of this hormone as melatonin is a light sensitive hormone and its secretion influence under different photoperiod. Alveolar type 2 cells of lung secrete surfactant protein. As in experimental findings when stz induced diabetic rats were treated with melatonin (4mg/kg) bwt under different photoperiod condition and level of surfactant protein D was measured it was find out surfactant protein D expression was higher in LP treated rats as well as melatonin and SP treated diabetic rats. Thus it can be concluded melatonin and photoperiod in diabetic condition influence surfactant D secretion.
Keywords; Melatonin, photoperiod, surfactant protein, diabetes, pineal gland

OP-23

Effect of fungal pathogens on morphological and biochemical properties of *Aloe vera*

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Aloe vera (L.) Burm. f. is an important medicinal plant with long and illustrious history. It is documented with long time tradition of use by variety of cultures. It is being used across the world for its health, beauty, medicinal and skin care properties. In addition, *A. vera* possessed antimicrobial activities against number of phytopathogens. However, this plant is suffered with various fungal diseases caused by variety of fungal pathogens in different seasons. These fungal diseases affect the morphological characters and diminishes the quality, quantity and production of gel along with alteration in the production of several secondary metabolites. Therefore, the present study was aimed to evaluate the alteration in the morphological and biochemical characteristics of *A. vera* artificially infested with *Colletotrichum gloeosporioides* and *Fusarium proliferatum*. Results of the present study revealed that both the pathogens have the ability to alter the morphological (in terms of plant height, leaf characteristics, colour and consistency of gel) and biochemical (chlorophylls, total sugars, phenolics, total anthraquinones, total flavonoid and vitamin E) properties of *A. vera* plants. Therefore, control of the fungal diseases by applying appropriate management strategies is essential to protect this medicinal plant of massive commercial value.

OP-24

A compendium of rust fungi of India

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Rust fungi is the largest natural group of plant pathogens among all fungal groups showing unique systematic characteristics. It constitutes 95% of the subphylum *Pucciniomycotina* and about 8% of all described Fungi. The research on rust fungi in India started with the arrival of foreign visiting scientists who collected fungi and sent specimens to European laboratories for identification. With the establishment of Imperial Agricultural Research Institute (IARI) at Pusa (Bihar) in 1905 which later shifted to Delhi, laid the foundation for many useful researches of Indian rust fungi and in producing many renowned mycologists. The available literature on Indian rust fungi from all possible resources was compiled in this document. The results of this compilation revealed the diversity of these fungi into 16 families, 69 genera and 640 species. They belong to *Coleosporiaceae*, *Crossopsoraceae*, *Gymnosporangiaceae*, *Melampsoraceae*, *Milesinaceae*, *Ochropsoraceae*, *Phakopsoraceae*, *Phragmidiaceae*, *Pileolariaceae*, *Pucciniaceae*, *Pucciniastraceae*, *Raveneliaceae*, *Skierkaceae*, *Sphaerophragmiaceae*, *Tranzscheliaceae* and *Zaghouaniaceae*. Most of these fungi are characterized and identified based on morpho-taxonomic characters, required their molecular characterization. This will be helpful to provide many Indian rust fungi placed in *incertae sedis*, their correct taxonomic position.

OP-25

Multifaceted role of small molecule kinase inhibitor in Dnmt3aR878H/+ Npm1cA/+ acute myeloid leukemia.

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A series of in-lab developed specific CKIα and CDK7/9 kinase inhibitors showed promising leukemia cure potential in MLL-AF9 AML preclinical models. These inhibitors preferentially suppress the transcription elongation of super-enhancer driven oncogenes. These kinase inhibitors were very efficient in MLL-AF9 AML, upon inhibitor treatment we observed extended life span and cure of ~40% of mice. Further, it was lost in Rag-/- mice and WT mice depleted with T cell. Hence, the immune system, especially the T cells might be a major factor for the A51 potential cure mechanism. Next, we went on to see its effect on AML evolved from common mutation of age-related clonal hematopoiesis i.e., mutations in DNA methyltransferase 3A (Dnmt3a) and nucleophosmin 1 (Npm1). We show that blocking CKIa together with CDK7 and/or CDK9 synergistically stabilize p53, deprive leukemia cells of survival and proliferation maintaining oncogenes, and induce apoptosis. Leukemia progenitors are selectively eliminated by the inhibitors, explaining their therapeutic efficacy with preserved hematopoiesis and leukemia cure potential.

OP-26

A study on Anthracnose of Clusterbean [Cyamopsis tetragonoloba (L.)Taub]

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Clusterbean [Cyamopsis tetragonoloba (L.)Taub] is an important dry land, draught hardy, annual Kharif crop grown widely under rain fed (barani) condition for grain, green fodder, vegetable, green manuring and for seed purposes. It has a great industrial importance in recent years mainly due to presence of gum in its endosperms. Guar gum has several diversified uses in textile, paper, food processing and cosmetics industries etc. The crop suffers due to number of diseases like Vascular wilt, Charcoal rot, Powdery mildew, Alternaria leaf blight and Anthracnose. Out of which Antracnose is the most important disease. This disease is characterized by black spots on leaves, petioles and stem. Anthracnose caused by the fungus Colletotrichum capsici f.sp. cyamopsicola has been found to be a serious disease in the guar growing areas. Plants of all ages were susceptible to the disease but the disease intensity increased with the age of the plant. This pathogen is seed borne in nature. The fungus survives for 12 months in the debris in the soil. Optimum temperature and relative humidity for mycilial growth and sporulation was 300c and 100 per cent, respectively.

Keywords: Anthracnose, Clusterbean, Temperature, Relative Humidity,

OP-27

Sarphunka: A Magic Herb: Review

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This plant is commonly known as 'Sarphunka' and abundantly available in tropical and subtropical areas. It has the property of healing all types of wounds. In ayurvedic system of medicine various parts of this plant are used as remedy for impotency, asthma, diarrhoea, gonorrhea, rheumatism, ulcer and urinary disorder. Active component of T. purpurea is tephrosin. The present review comprehensively summarizes the ethnomedicine, phytochemistry, pharmacology, and toxicology of T. purpurea.
Keywords: Sarphunka, T.purpurea, Tephrosin, Ethnomedicine

OP-28

Comparative proteomics study in chickpea root under drought-Stress revealed complexity of protein abundance

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Global warming has been reaching to an alarming situation and leading to change in climatic condition up to a dangerous level. The irregular rainfalls, drought, flood and land degradation and other such factors are the major consequences of these climatic changes and causing a decrease in the productivity of many economically important food crops. To study the effect of drought and the mechanism of drought stress tolerance, a comparative proteomic analysis of roots of the hydroponically grown three week old chickpea seedling was performed at different time points after drought induction using 2-Dimensional gel electrophoresis (2-DE). After PD-Quest analysis 110 differentially expressed spots were subjected to MALDI-TOF/TOF and among them75 spots were identified with a significant score. These identified proteins were classified into eight categories based on their functional annotation. Proteins involved in carbon and energy metabolism comprised 23% of the total identified proteins whereas proteins related to stress response represented 16% of the total protein spots followed by those involved in protein metabolism (13%), ROS metabolism (13%), signal transduction (9%), Secondary metabolism (5%) and N and amino acid metabolism (7%). The abundance of some proteins was validated using western blotting and Real Time PCR. The information for root proteins responsible for better drought tolerance, inferred by comparative proteomics analysis, may further be used in genetic engineering as well as breeding programs for the benefit of farmers practicing chickpea.

OP-29

Magnetic iron oxide core - copper oxide shell nanoparticles with enhanced antibacterial potential for waste water treatment

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Background- The antibacterial property of CuO nanoparticles is well established. However, nanoparticles may not be directly used for water decontamination, as these may form a colloidal suspension making them difficult to remove after treatment. It is necessary to develop strategies for removal of nanoparticles from treated stream, as their presence may cause toxicity to environment and aquatic life. The aim of the present study is synthesis and evaluation of antibacterial core-shell nanoparticles having iron oxide magnetic core covered with copper oxide shell. The antimicrobial CuO shell will decontaminate water while the presence of magnetic core will help in the separation of nanoparticles from treated water. Methods and preliminary results - Spherical magnetic iron oxide-copper oxide core-shell nanoparticles were synthesized by first preparing iron oxide core (size range 8-40 nm) followed by deposition of copper oxide shell via two different methods i.e. oxalate route (size range 20-50 nm) and simple precipitation route (size -105 nm). Synthesized nanoparticles were characterized by SEM-EDX and Raman spectroscopy. Antibacterial potential of core-shell nanoparticles were evaluated against E. coli and compared with bulk CuO. The oxalate route nanoparticles showed 99.999% killing of E. coli cells (challenge count 1 x105 CFU/ml) at 50 µg/ml concentration within 4 hrs, whereas core-shell nanoparticles synthesized via simple precipitation route showed 6 log reduction in E. coli cells (challenge count 1.1x106 CFU/ml) at 50 µg/ml in 24 hrs. In comparison bulk CuO particles were found to be effective at 200 µg/ml concentration against 1.1 x106 CFU/ml within 24 hrs. Preliminary conclusion - The magnetic core-shell nanoparticles were four times more effective in comparison to high purity bulk CuO and thus, due to the better antibacterial performance and ability to be collected by applying magnetic field the nanoparticles can be employed as antimicrobial for waste water treatment.

OP-30

Study of Unsegmented Tapeworm From District Jalaun, (U.P.) India

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During the cesto- piscian study of Bundelkhand region of Uttar Pradesh, we come across this very important district Jalaun and we visited Kalpi (Kalpi is small town located between Kanpur and Jhansi, At the end of 4th Century King Vasudeva a King from Kannaj founded this city) Yamuna river, Yamuna ghat, by our team in Jan 2020 and collected various species of the local fishes but one of freshwater fish, Channa punctatus yielded three small moving parasites. These parasites were unsegmented tapeworm which were preserved in 5% formalin, in the laboratory these parasites were thoroughly washed stained, mounted and ultimately identified new member of family Capingentidae Hunter, 1930.

Keywords: Jalaun, Yamuna river, Yamuna Ghat, Fresh water fish, Tapeworm, Morpho-taxonomy.

OP-31

Effect of agrichemicals on the growth of Eisenia fetida in earthen pots with special reference to herbal pesticide

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India traditionally has an agricultural based economy and it is considered to be the backbone of Indian economy. India, second largest populated country of the world, currently supports nearly 17.84% of the world population having 2.4% land resources and 4% of water resources. To meet the demands of growing population, the country needs to raise its agricultural production to provide food as well as nutrition security. Good emerging trends and solutions for sustainable crop protection through use of time tested agrochemicals; seed treatment, agronomy and bio-technological development have raised the quantity and quality of agricultural production. Earthworms are important, beneficial invertebrates in turf grass, where their burrowing and feeding activity enhances soil structure and fertility and incorporates thatch and other plant residues into the soil. Effects of three agrichemical on earthworm (Eisenia fetida) to soil supplemented with different concentrations of the examined agrichemical based on the recommended agricultural doses. Their commercial formulations are: Glyphosphate [N-(phosphonomethyl)glycine], Kamdhenu paudhvardhak, Cypermethrin{[Cyano-(3-phenoxyphenyl)methyl]3-(2,2-dichloroethenyl)-2,2 dimethylcyclopropane-1-carboxylate}. The test was conducted in earthan pots . All our findings indicated that E. fetida has a higher rate of growth.Mortality, biomass, and growth inhibition were chosen as toxic endpoints. The effect of high concentration of pesticides effects growth of E. fetida. Results indicated that majority of farmers opted for vermiculture due to environmental consciousness, to save the soil health and for the upliftment of their status.On the other hand, Kamdhenu paudhvardhak, was found ecologically safe because weight was not significantly changed.

OP-32

Isolation of Siderophore Producing Bacteria From Seaweed

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Seaweed is a term applied to multicellular, marine algae which are large enough to be seen by the naked eyes. Some seaweeds are grown up to 60 meters in length, it includes member of the red, brown and green algae. They belong to the kingdom protista that is they are not plants. Some species of seaweeds are used for nutritional, bio-medicinal and also for bio-remediation process. So these seaweeds are used as food, fodder, bio-fertilizers and for bio-fuel production. From the seaweed (Solieria robusta, Kappaphycus alvarezii,Gracilaria edulis, Turbinaria ornata), endophytic bacteria were isolated and they were checked for siderophore activity. Siderophores (from the Greek: “iron carriers”) are defined as relatively low molecular weight, ferric ion specific chelating agent elaborated by bacteria and fungi growing under low iron stress. The role of these compounds is to scavenge iron from the environment and to make the mineral, which is almost always essential, available to the microbial cells. From the seaweed samples (Solieria robusta, Kappaphycus alvarezii,Gracilaria edulis, Turbinaria ornata) totally 10 organisms were observed in the culture plates. The 10 different isolates were characterized by Gram staining and its shows both gram positive and gram negative results. Among 10 isolates, 4

isolates were gram positive bacteria and 6 isolates were gram negative. The isolates 1, 2, 8, 9, & 10 showed rod shaped colonies and remaining 5 were cocci in shape. Biochemical studies were done for the isolated 10 bacterial strains. Biochemical tests such as MR&VP, citrate, Indole, urease, carbohydrate fermentation test etc., Siderophore producing bacteria is used as plant growth promoting agent.

Key Words: Seaweed, Siderophore, nutritional, bio-fertilizer and bio-fuel

OP-33

In Silico Screening, of Best Phytoconstituents of Couroupita Guianensis on The Basis of Biopharmaceutical, Physiochemical, Toxicological And Drug Likeliness Considerations Along With Molecular Docking Scores For Anti-Inflammatory Activity

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Couroupita guianensis Aubl. belongs to the family Lecythidaceae was commonly described as cannon ball tree widely used in traditional folk medicine for the treatment of a broad spectrum of diseases including antibacterial, antifungal, antibioflim, antidepressant, antiseptic and analgesic qualities.It has been reported for Anti-inflammatory activity also due to α-amirin, β-amirin, β-sitosterol and tannins .As in-silico work has gained significant attention of research community and widely used for research purpose, Here a workflow was designed to identify most potent anti -inflammatory agent among α-amirin, β-amirin, β-sitosterol and tannins, so that it will be utilize in the development of anti-inflammatory Drug delivery system .

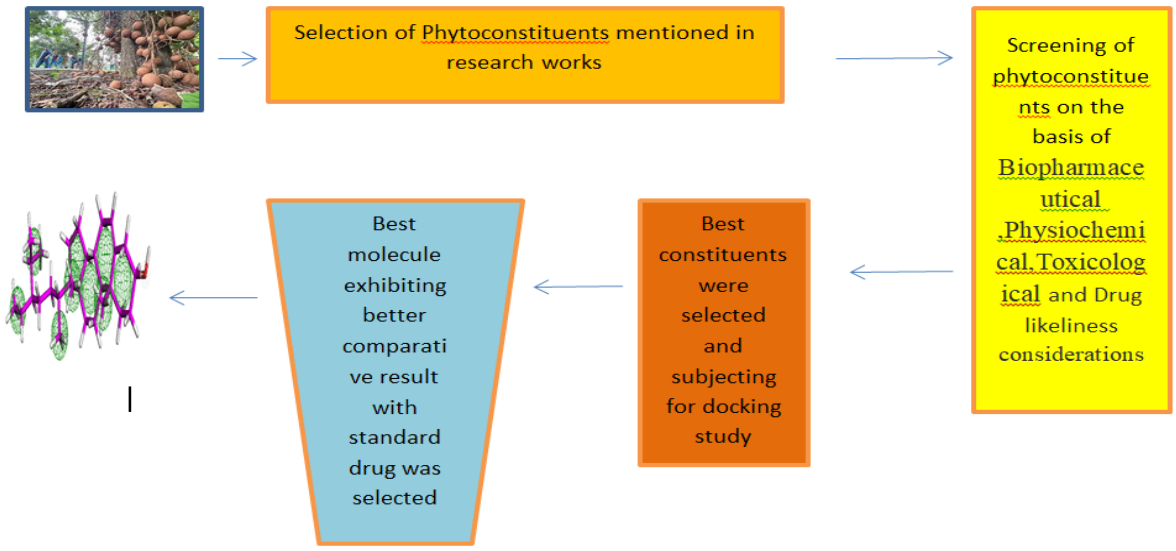

Figure 1 -Graphical Abstract

OP-34

The Immune System in Cancer Prevention

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Cancer is a condition that has plagued humanity for thousands of years, with the first depictions dating back to ancient Egyptian times. However, not until recent decades have biological therapeutics been developed and refined enough to safely and effectively combat cancer. The immune system can identify and destroy nascent tumor cells in a process termed cancer immunosurveillance, which functions as an important defense against cancer. Recently, data obtained from numerous investigations in mouse models of cancer and in humans with cancer offer compelling evidence that in principle, tumor development can be controlled by cytotoxic innate and adaptive immune cells; however, as the tumor develops from neoplastic tissue to clinically detectable tumors, cancer cells evolve different mechanisms that mimic peripheral immune tolerance in order to avoid tumoricidal attack. However, the immune system can also promote tumor progression. Together, the dual host-protective and tumor-promoting actions of immunity are referred to as cancer immunoediting. This study focuses on how the immune system protects against infections and on its role in cancer development and disease. Focus is set on the interactions of the innate and adaptive immune system and tumors. The role of pleiotropic cytokine that plays a very important role at the interface of innate and adaptive immune systems in tumor development and induction of anti-tumor immune responses. Further, immune cells as prognostic and predictive markers of cancer will be discussed that provide the fundamental basis for further study of immunity to cancer and for the rational design of immunotherapies against cancer. We conclude that the immune system and developing tumors are intimately intertwined. Anti-tumor immune responses can be prominently boosted by multimodal therapies aiming on the one hand to induce immunogenic tumor cell death forms and on the other hand to actively counteract the immune suppressive microenvironment.

Keywords: Tumor cells, tumor-associated macrophages, metastasis-associated immune cells, immune cross-talk, cancer heterogeneity

OP-35

Assessment of Microplastic in the water samples of river Alaknanda.

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Plastic pollution is a major problem of the world. After breakdown, plastic waste gets converted into small fragments, i.e., microplastics (<5mm) and make the problem worse. These microplastics have invaded almost every ecosystem soil, river, lakes, seas and oceans. Since the rivers of the Himalayas are not only habitat of diverse flora and fauna, but also serve as drinking water sources in many regions. Henceforth, the aim of the study was assessed of the microplastics in the one of Himalayan river Alaknanda which is also a tributary of the river Ganga. Since this river does not remain untouched from the plastic pollution, hence it can serve as a mega source of Microplastic not only for aquatic organisms, but also for human population that depend on the river for drinking water. For the assessment water, the samples were taken from five sampling sites in Sringar, Garhwal. The sample was processed for presence of Microplastics as per the method

given in than a manual of NOAA. Suspected particles were analyzed using SEM-EDS to get the composition of suspected particles. In the study total 566 particles were recorded from all sampling sites and mainly categorized as fragments, film, foam, fiber and pellets. Among which most dominant type of microplastics were threads/fibers with a total number of 412 particles while least found particles were of foam only with 9 particles. It is concluded that there is a presence of microplastics in water sample of river, but it is suggested to proceed the research further to understand the chemical characterization of those microplastics.

OP-36

Genetic Variability for Sucrose Content in Soybean Germplasm Collection

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Soybean has several health benefits as it constitutes numerous nutraceutical components which are responsible for keeping atherosclerosis, diabetes, breast cancer, osteoporosis at bay. Apart from basic nutrients like protein (40%), oil (21%), vitamins, soybean has tocopherols and isoflavones as major nutrients. Despite its nutrients rich profile, utilisation of soybean in food products is very meagre. Presently, only 5-7% of total soybean produce in the country is utilised for processing food products. Apart from the presence of antinutritional factors, its bland/astringent taste is also the main culprit for poor acceptance of food products processed from soybean seeds. This taste related deterrent can be overcome by increasing sucrose content of soybean seeds which imparts sweetness and enhances organoleptic acceptance of food-grade soybean. High sucrose content soybean genotypes are desired by soy food industry for processing soy milk, tofu and other soy food products as it contributes to favourable taste.Therefore, there is an interest in improving soybean seed attributes so that it contains sweet taste while lesser antinutritional factors by increasing sucrose content. In this study, estimation of sucrose content through HPLC was carried out in 321 soybean accessions from 14 countries. The mobile phase (acetonitrile/water 75:25 v/v) was run isocratically at a flow rate of 1.0 ml/min. The elution was monitored by a refractive index detector. Genetic variability in sucrose content among these genotypes was observed and revealed a range of 1.2 -9.6 g/100g with 26 genotypes containing sucrose content > 7.0 g/100g and 9 genotypes having < 2.0 g/100g, thereby exhibiting about 8 fold genetic variation. Screening for genetic variability among genotypes is the first step to study the genomic regions linked with any quality trait. Identification of high and low sucrose content soybean genotypes is prerequisite to generate F2 population for mapping QTLs associated with the sucrose content.

Keywords: Soybean, sucrose content, HPLC (High performance liquid chromatography), soy-food, genetic variability, genotypes.

OP-37

Zero valent iron nanoparticles and water remediation: A review

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A variety of nanoparticles are utilized for water remediation. Use of nanoparticles like metal oxides, zeolites, metals, bimetallic nanoparticles and zero-valent nanoparticles have been reported in the literature. The zero valent nanoparticle have gained popularity as

water remediation tools due to ease of synthesis and cost effectiveness. Amongst the different categories of nanoparticles used for water remediation, zero-valent iron nanoparticles (nZVI) have been used most extensively. The current review focuses on the use of zerovalent iron nanoparticles for water remediation, the remediation mechanism of the zero valent iron nanoparticles, the limitations of currently used zero valent iron nanoparticles. The review begins with brief discussion about the types of nanomaterials, applications of nanotechnology in life sciences followed by the detailed discussion regarding the water remediation using zero valent iron nanoparticles. Traditionally synthesized nZVI efficiently remediated variety of environmental contaminants including heavy metals, nitrate, chlorinated contaminants, organic dyes, insecticides, herbicides. The major remediation mechanism is reduction and adsorption. nZVI proved as good remediation agents but have certain limitation like surface passivation with time, low dispersibility, limited mobility and ecotoxicity. To overcome these limitations bimetallic nanoparticles were synthesized to include a second metal with the ability to reduce like iron. The nZVI were synthesized to include a surfactant to improve dispersibility and nZVI were synthesized with some support materials to prevent aggregation of nanoparticles.

Traditionally chemical/synthetic reducing agents like sodium borohydride have been used extensively for the synthesis of nanoparticles. Borohydride is a toxic reagent which is capable of causing skin toxicities, eye damage and even reproductive toxicities. Due to this the use of greener reducing agents and green techniques for nanoparticles synthesis have gained popularity. The greener techniques employed for synthesis are by use of microorganisms, green plants, microwave assisted techniques and replacement of borohydride as reducing agent with green reducing agents.

OP-38

Biocontrol of Fungal Phytopathogens of Pumpkin (Cucurbita pepo L.)

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Pumpkin (Cucurbita pepo L.) is one of the important vegetable crop cultivated throughout the world because of its nutritional and medicinal values. Pumpkin is a good source of vitamin C (ascorbic acid), minerals, carotenes (α and β), various dietary fibers and phenolic mixtures. As with all crops, pumpkins are also subject to abiotic and biotic diseases that limit the crop quality and yield. Alternaria leaf blight and Fusarium fruit rot are two major fungal diseases affecting pumpkins. These two diseases need to be managed properly. Although these pathogens could be controlled using fungicides, the use of fungicides is not eco-friendly, as its use cause many problems to environment as well as human health. Hence, to develop an eco-friendly biocontrol management strategy against these phytopathogens, the present study was undertaken. In this study, phytopathogenic fungi Alternaria cucumerina and Fusarium solani were isolated from infected pumpkin plant explants collected from crop fields. Nine bacterial cultures obtained from MTCC such as Bacillus amyloliquefaciens (MTCC 10439), Bacillus cereus (MTCC 9017), Bacillus subtilis (MTCC 8142), Enterobacter aerogenes (MTCC 8558), Erwinia sp. (MTCC 2760), Pseudomonas aeruginosa (MTCC 7904), Pseudomonas fluorescens (MTCC 9768), Pseudomonas marginalis (MTCC 2758), and Pseudomonas monteilii (MTCC 9796), were screened for their antifungal activity against the two isolated phytopathogenic fungi by dual culture method. Out of the nine bacterial cultures screened, bacteria such as Enterobacter aerogenes (MTCC 8558) and Pseudomonas

aeruginosa (MTCC 7904) exhibited effective antifungal activity against both the fungi tested such as Alternaria cucumerina and Fusarium solani, and could be further studied for the development of effective eco-friendly management strategy against these fungi.
Key words: Pumpkin, Alternaria cucumerina, Fusarium solani, antifungal bacteria, biocontrol

OP-39

Efficacy of wheat grass juice on oxidative stress in recovered from severe or critical cases of COVID-19.

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Worldwide, Most people who get COVID-19, the disease caused by a novel corona virus called SARS-CoV-2, will have only mild illness or up to 6 weeks for severe or critical cases. Newer data show that recovery varies for different people, depending on age and overall health. Fatigue, headache, and trouble breathing were the symptoms most likely to linger. The corona virus (COVID-19) pandemic remains a worldwide health problem for almost a year, where till now no end is in sight. Free radicals, reactive oxygen species (ROS) and reactive nitrogen species (RNS) also play an important role in the initiation and progression of symptoms which is mostly caused by oxidative stress. The patients have different immune response to infection of COVID and probably one of the most possible factors contributing to outcome determination is oxidative stress. Oxidative stress assayed by analysis of malondialdehyde (MDA), superoxide anion and H2O2, and antioxidant enzymes. Malondialdehyde (MDA) as an indicator of lipid peroxidation and antioxidant status. Wheatgrass is popular as an alternative herbal medicine for its great health benefits to the human body contains high concentrations of chlorophyll, active enzymes, amino acids, vitamins, and other nutrients. Wheat grass is believed to have many unexplained natural healing qualities. One of the ingredients with major benefit in wheatgrass is chlorophyll, which has the ability to draw toxins from the body. Wheatgrass juice to help offset COVID-19 side effects and may help body to recover by reducing oxidative stress. Nutritive supplements of wheatgrass juice maintains the blood LPO level and a positive balance of antioxidants for a better outcome in terms of delayed recurrence and better Quality of Life (QOL) for patients recovered from critical cases of COVID-19.
Keywords: - COVID-19, Oxidative stress, wheatgrass

OP-40

Efficacy of Different Oil Cakes For the Management of Root-Knot Nematode Meloidogyne Incognita Infesting Vigna Mungo

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Root-knot nematodes are the major threat to a wide range of crops worldwide. Growing concerns about human and environmental safety have led to the withdrawal of commonly used nematicides, thus motivating the development of alternative nematode management strategies. A pot experiment was carried out to evaluate the efficacious nature of different oil cakes such as cotton cake, mustard cake, jasmine cake, sesame cake and pongamia cake (applied at two doses, 35g and 70g/pot) against the root knot nematode M. incognita infesting black gram, Vigna mungo. All applied treatments significantly ($P \leq 0.05$)

improved the plant length, fresh and dry weight of plants and number of pods per plant compared to untreated inoculated control plants. The root gall development due to M. incognita was also significantly reduced in all the treatments. However, the increase in plant growth was more pronounced at higher doses (70g/pot). Among all treatments, the mustard cake (@ 70g/pot) showed the most significant exaggeration in plant growth characters and suppression in nematode multiplication. On the other hand, cotton cake (@ 35g) was found to be least effective. Thus the above results indicate that oil cakes can help combat the root-knot nematode attack in a sustainable and environment-friendly manner.

OP-41

Softwoods- Their medicinal importance and identification

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Throughout human history, conifers have provided a wealth of products beneficial to human society. The wood of many species has been used to produce essential oils, resins, fragments and medicinal products. In our present study, the selected softwood species i.e. Araucaria columnaris, Cedrus deodara and Thuja orientalis are taken with an aim to evaluate its detailed microscopic features and their medicinal uses. For each species, five mature trees of uniform diameter and wood samples of size $5cm^3$ were taken at breast-height. They were cut into 2 cm^3 size and fixed in FAA for 24-48 hours, after which they were preserved in 50% alcohol. Cross, Radial longitudinal and Tangential longitudinal sections were obtained for microscopic analysis. Permanent slides were prepared by following standard procedure. Small radial slivers were treated with Franklin's solution for maceration to measure fibre and vessel length. The terminology, measurements and anatomical features were taken according to (IAWA Committee, 1989).
It was observed that all the selected species possess distinct growth ring boundary except A. columnaris. Transition from early to latewood was abrupt in T. orientalis while gradual in A. columnaris and C. deodara. Rays varied from uniseriate to biseriate in all species. Cross field pitting were taxodioid type in T. orientalis and A. columnaris while fenestriform type in C. deodara. Resin canals occurred in both early wood and latewood regions in C.deodara while deposits were found in rays of T. orientalis and A. columnaris. From medicinal point of view, the wood of T. orientalis is used in the treatment of cough, cold, dysentery, rheumatism and parasitic skin diseases. C.deodara wood is utilized in curing piles, epilepsy, fever and kidney stones. A. columnaris is used in cardiac disorders. The present study shows that due to presence of gummy deposits, resins, latex in these woods they find wider application in pharmaceutical industry.
Keywords: Softwoods, Resins, Rheumatism, Epilepsy, Cardiac disorder

OP-42

Study of effect of silver based agroforestry system on growth and yield attributes of different varieties of wheat

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The present investigation was carried out to examine the effect of silver oak based intercropping on growth and yield attributes of different varieties of wheat crop. The experimental plots laid out in randomized block design with 12 wheat varieties, viz. VL

Gehun 401, VL Gehun 404, VL Gehun 421, VL Gehun 616, VL Gehun 719, VL Gehun 738, VL Gehun 802, VL Gehun 804, VL Gehun 829, VL Gehun 832, VL Gehun 892 and VL Gehun 907. Under Oak based agroforestry system, VL Gehun 804 variety was found to have average maximum plant height as on 30, 60, 90 and 120 DAS; number of tillers per running row meter as on 30, 60 and 90 DAS; Tiller Production Rate 0-30 DAS and 60-90 DAS; dry weight as on 60 and 120 DAS; number of effective tillers; flag leaf length; spike length; and Harvest Index. VL Gehun 719 variety was found to have average maximum Tiller Production Rate 30-60 DAS and dry weight as on 90 DAS. VL Gehun 892 variety was found to have average maximum number of grains per spike. VL Gehun 832 variety was found to have average maximum test weight and straw yield. VL Gehun 829 variety was found to have average maximum dry weight as on 30 DAS and grain yield.

Key Words – intercropping, randomized, flag leaf, yield attributes

OP-43

Mitigation of drought stress and acquisition of phosphorus for crops growing in hilly regions

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Among the extreme habitats, drought is most harsh abiotic stress affecting growth, development and productivity of crops. Plants also face limitations of certain nutrients such as phosphorus required for different physiological and metabolic activities. Stress-adaptive phosphorus-solubilizing microbes in rhizospheric soil can help plants to combat water scarcity and overcome the problem of phosphorus unavailability to plant systems. The present investigation deals with the isolation of drought stress adaptive and P-solubilizing microbes from rhizospheric soil of different cereals and pseudocereals and their role in mitigation of drought stress in great millet. A total of 193 rhizospheric microbes were isolated and screened for their capability to solubilize phosphorus under drought stress. Twenty isolates exhibited P-solubilizing attribute under drought stress, which were further screened for plant growth promoting (PGP) traits such as solubilization of zinc and potassium; production of Fe-chelating compounds, indole acetic acid, hydrogen cyanide and ammonia. On basis of multifunctional PGP traits, two efficient and potential microbes were evaluated for PGP in great millet *in vitro* under green house with different water regimes. The isolates were found to be efficient in terms of enhancing accumulation of different osmolytes such as glycine betaine, proline, sugars, increased chlorophyll content, and decreasing lipid peroxidation. The isolates were identified by 16S/18S rRNA gene sequencing as *Streptomyces laurentii* EU-LWT$_3$-69 and *Penicillium* sp. EU-DSF-10. To best of our knowledge *Streptomyces laurentii* has been reported first time as PGP and drought adaptive bacterium. PGP drought-adaptive phosphorus solubilizers could be used as bioinoculants for crops under water scarcity ecosystems.

Key words: Diversity, Drought, PGP traits, Phosphorus, Plant Growth Promotion, Rhizospheric

OP-44

Synthesis And Charecterisation of Chitosan-Hyaluronic Acid Hydrogel For The pH Sensitive Co-Delivery Of Cisplatin And Doxorubicin

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Cancer has been one of the detrimental disease and is the second leading cause of death globally. Chemotherapy is one of the most effective treatments, yet its widespread application is restricted because of adverse drug reactions, low therapeutic index, drug tolerance, and poor targeting. To overcome this, drug delivery strategy has been proposed. In this work a hydrogel based drug delivery system has been successfully developed using chitosan modified by Nitrosalicylaldehyde and aldehyde Hyaluronic acid. Anti- cancer drugs Cis- Platin and Doxorubicin(DOX) are incorporated into this hydrogel for lung cancer delivery. The obtained hydrogel was characterised by various spectroscopic techniques such as FTIR, DLS, FESEM and TEM. The percentage of drug release was determined by UV-Vis spectroscopy at different pHs. Cytotoxicity studies confirmed that the material exhibits excellent inhibitory activity against cancer cells.

OP-45

Cloning and characterization of a novel nagD2 gene in Candida albicans: A human fungal pathogen

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The catabolic pathway of N-acetylglucosamine (GlcNAc) in Candida albicans is an important facet of its pathogenicity. Genes responsible for GlcNAc catabolism are arranged as a cluster, called Nag regulon (Kumar et al., PNAS, 2000). Here, the importance of a novel and GlcNAc inducible gene which has a conserved nagD domain, named as nadD2 is being reported for the first time. This gene, a member of Halo Acid Dehalogenase Super Family (HADSF), in C. albicans is named as CaNagD2. Null mutants of CaNagD2 were created by a single transformation based gene disuption technique. The mutants of CaNagD2 displayed hypersensitivity to various cell wall damaging agents and it also accumulated high levels of chitin in their cell walls. The gene expression studies revealed that, the GlcNAc induced expression of CaNagD2 is dependent on EFG1 mediated RAS1 signalling pathway. Morpho-pathogenic studies revealed that the mutants of CaNagD2 failed to undergo yeast to hyphal transition in a variety of media including serum and have predictably reduced virulence in a murine model of systemic candidiasis. Collectively, this study suggest CaNagD2 as a novel target for developing antifungal drug therapeutics.

OP-46

Alzheimer's Disease and its Therapeutics

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Acetylcholinesterase (AChE) is an enzyme that is responsible for the hydrolysis of acetylcholine (ACh), a neurotransmitter at cholinergic synapses. AChE, a serine hydrolase is an important drug target in the treatment of Alzheimer's disease. Consequently, AChE inhibitors were designed as potential drug candidates for significant therapy of Alzheimer's disease (AD). Subsequently, tacrine, donepezil, rivastigmine galantamine were developed and approved for the symptomatic treatment for AD. In the present time, multiple cholinesterase inhibitors such as natural derived ChEIs & synthetic analogs are being developed to provide a symptomatic treatment to this disease. In this paper, we will summarize the different types of cholinesterase inhibitors reported in the literature. This paper will also highlight the current status & future directions for the development of novel drugs.
Keywords: Acetylcholine, Alzheimer's disease, AChE inhibitors, Carbamates, Donepezil, Galantamine, Rivastigmine, Tacrine

OP-47

Development of a Zebrafish hyperglycemic model for studying diabetes mellitus

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Diabetes mellitus (DM) is a metabolic disorder described by hyperglycemia and changes in the metabolism of carbohydrates, fats and proteins. Apart from the physiological and anatomical characteristics of higher species, zebrafish (Danio rerio) exhibits many features of vertebrate models, which inspired scientists around the world to use it in biomedical research. Zebrafish were exposed to diabetogenic agents such as alloxan monohydrate (AM), streptozocin (STZ) and glucose water solution (GLU-W) to induce diabetes mellitus (DM), and it was observed that subjects metabolized elevated glucose level to normal to attain glucose homeostasis if left normal after DM induction. Exposures of 100 mg AM/100 ml and 200 mg AM/100 ml for 30 minutes are not capable of inducing DM in subjects, while 300 mg AM/100 ml and 400 mg AM/100 ml for 30 minutes are capable of inducing DM in zebrafish. In a group treated with 400 mg of AM/100 ml, mortality was reported. Overall, it has been found that a dosage of 300 mg AM/100 ml for 30 minutes is sufficient to induce DM in subjects. Zebrafish showed diabetes when treated with AM for 30 minutes after 1 % GLU-W minimum, but when the subjects left normal after induction, the level of blood glucose decreased with respect to time. It was also noted that when subjects were held in different GLU-W (1%, 2% and 3%) for a minimum of 21 days, then 21 days required to cause DM in the subject treated with 1% of GLU-W treated subjects, while 1% and 2% of GLU-W displayed diabetes only after 7 days and 4 days. Streptozocin (0.35 mg/gm body weight) exposed with its booster dose was found to sustain diabetes without any mortality for 21 days in the subject, which may be helpful for researchers working on secondary complications of DM taking zebrafish as a model.

Keywords: Diabetes mellitus, Zebrafish, Alloxan monohydrate, Streptozocin, Glucose water solution

OP-48

A Study on Candiduria among diabetic patients

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Background: Candiduria, the presence of Candida in urine is caused by Candida albicans and other species of Candida. Urinary tract infection (UTI) is a frequent condition in diabetic patients, and candiduria could be an indicator of infection or the onset of an underlying disseminated infection. However, this condition could be hazardous due to diminished immune response in diabetic patients.

Methods: About 50 clinical samples of urine were collected from both asymptomatic and symptomatic diabetic patients. The specimens were processed both qualitatively and quantitatively. Calibrated loop method which is a semi-quantitative method was employed for determining significant candiduria. Colony counts of more than 105CFU/ml of urine sample were taken as significant counts. For isolation of yeasts, the samples were inoculated into SDA and colonies if present were processed using routine identification procedures.

Preliminary results: Amongst the 50 clinical samples from asymptomatic diabetic population, 11(22%) were positive for candiduria and amongst the 50 samples from symptomatic diabetic population, 3(6%) were positive for candiduria. All the isolates were identified as Candida albicans.

Conclusion: High incidence of Candiduria in the present study suggests the need for instantaneous treatment amongst the diabetic population for Urinary tract infection to prevent further complications and dissemination.

OP-49

Phytochemical Screening And Characterization Of Withania Somnifera,Moringa Oleifera ,Cucurbita Maxima,Acorus Calamus And Andrographis Paniculata Medicinal Plants Around Ujjain City, India For Their Antimicrobial And Antioxidant Activity

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Ayurveda involves the use of natural elements to eliminate the root cause of a disease by restoring balance and at the same time creating a healthy life-style to prevent the recurrence of imbalance. Herbal medicines have existed world-wide with long recorded history. World Health Organization (WHO) have estimated that 80% of the world's inhabitants still rely on traditional medicines for their health care. India is well-known to be one of the major biodiversity centre with about 45,000 plant species, including 15,000 medicinal plants. The concept of polyherbalism is to achieve greater therapeutic efficacy. The active phytochemical constituents of individual plants are insufficient to achieve the desirable therapeutic effects. When combining the multiple herbs in a particular ratio, it will result a better therapeutic effect and reduced the toxicity. This review mainly focuses

on the importance of polyherbalism and its clinical significance. For this study a group of selected medicinal plants have been taken and extracted for their study of anti-bacterial and anti-oxidant activity. The plants selected are Moringa oliefera, Withania somnifera, Cucurbita maxima, Acorus calamus and Andrographis paniculata. The phytochemical compounds were screened by qualitative analysis method and the detected phytochemicals are tannins, saponins, alkaloids, phenols, terpenoids, flavonoids. The different solvents such as methanol, petroleum ether, chloroform and aqueous were used to extract the bioactive compounds from various parts of the selected medicinal plants. The anti-bacterial activity were demonstrated against the bacterial strains like Bacillus subtilis, Bacillus cereus, Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa by disc diffusion method. The anti-oxidant activity was evaluated by DPPH radical scavenging method.

Keywords: Polyherbal Formulation, Phytochemical Screening, Anti-microbial Activity, Anti-oxidant Activity, DPPH Method, Phytotherapy, Traditional Medicine

OP-50

Study of Medicinal Properties of Curry Leaves For Hair Growth: A Review

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In today's rapid development of the science and technology in the world the hair fall is considered to be one of the most important things to be worried. There are several causes for hair fall where the most common cause is due to the improper hair care, environmental factors and psychological factors. The environmental and psychological factors include pollution, toxic substances emitted from various industries into the environment, stress, emotional strains and so on. A study on hair fall in India was reported, which stated that the prevalence of hair fall is 60.3%, prevalence of dandruff is 17.1% and the prevalence of baldness is 70.8%. Many herbal plants are working well for the hair loss one such is the curry leaves, scientifically known as Murraya koenigii which is abundantly found in India. Murraya koenigii is sub-tropical plant belonging to the family of Rutaceae. It is a native plant of Asia and recently cultivated in Australia too. The curry leaves are also used as a seasoning agent in south Indian dishes for its flavour and aroma. Murraya koenigii reported to promote hair growth and also prevents premature greying. Murraya koenigii was also reported to have anti-disease properties therefore it is being used in the ayurvedic and siddha medicinal systems. Therefore, the present study focuses on the medicinal properties of the curry leaves so that curry leaves can be considered as a best source for hair growth. Thus, this review would help to develop many new hair care products using curry leaves as a major component.

KEY WORDS: Murraya koenigii, Hair loss, Curry leaves, hair growth, herbal hair products

OP-51

Role of Neuropeptides in the regulation of fish reproduction

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Neuropeptides exert an important role in the regulation of both mammalian and non-mammalian reproduction reproduction. It binds to receptors in target tissues, and elicits a number of downstream cascades including changes in secondary messengers, phosphorylation and eventually altered transcription. Various neuropeptides (vasotocin; VT, Isotocin; IT, Mesotocin; MT, Neuropeptide Y; NPY, Secretoneurin b; SNb, kisspeptin 2; kiss2, etc. has been reported in several tissues of teleost, mainly brain. The endocrine regulation of teleost reproduction is achieved by the coordinated actions of several peptide neurohormones. Recently, in the catfish *Heteropneustes fossilis, VT, IT, SN, kiss2, novel peptide , ITa* has been cloned and characterized. These peptides were shown to be involved in the regulation of catfish reproduction via influencing steroidogenesis, oocyte maturation, ovulation pathway. These peptides were also modulated by gonadotropin releasing hormone (GnRH). They potentiate GnRH effect on on gonadotropic cells, and also act directly on the pituitary cells. Thus, our investigation showed that neuropeptides play positive role in regulation of GnRH throughout the Brain-Pituitary- Gonadal axis and upregulates LH cells in the pituitary via playing vital role in catfish /teleost reproduction.

OP-52

Recent Advancements In In-Vitro Fertilisation

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With the birth of louise brown in 1978, Invitro fertilization has become the therapeutic mainstay for female infertility. In 1992, assistive insemination by using intra cytoplasmic sperm injection a graft of IVF technology, trumpet a new era in the treatment of male factor infertility. The field of assistive reproductive technology progressing with many new advances in the last decade. The present review focusses on the methods to improve the oocyte quality in older women and new stimulation that may improve the number of oocytes retrieved during invitro fertilization cycle. The reproductive amplitude of women declines significantly in the fourth decade which is directly associated to age related decrease in oocyte quality and quantity techniques were originally established to solve tubal related infertility problems in women with nano spermic partners. The oocyte maturation process involves a combination of nucleolus, cytoplasmic and epigenetic changes all of which require energy that is provided by mitochondria and oxidative phosphorylation. Innovations in Assisted Reproductive Technologies (ART) have overcome numerous seemingly insurmountable barriers to allow couples the chance to have families.Under ART there is a method called Artificial Insemination which is sometimes called intrauterine insemination (IUI), involves infusion of the male partner's (or a donor's) sperm into a woman's uterus at or just before the time of ovulation. IUI can guide couples with so called unidentified infertility or couples where the male partner has lesser sperm abnormalities achieve pregnancy. ICSI (intracytoplasmic sperm injection) is used for the same sense as IVF, but especially to overcome sperm problems. ICSI follows the same course as IVF, except that ICSI involves the blunt injection of a single sperm

into each egg to hopefully achieve fertilisation However, there is increasing evidence that ART-conceived children may be at greater risk of prenatal complications than consistently conceived children and that knowledge on long-term health effects of ART is incomplete. The respondents determined that the most positive aspect of affable IVF was the low doses of hormones used. Abandoment of cycles and breakdown of oocyte retrieval were perceived the most negatively. The favourable IVF treatment was percieved as a first step, assisting the hope of success with a standard treatment.
Keywords: fertility, IVF, Mitochondria, Nano spermic, Oocyte

OP-53

ANTI-CANCER PROPERTY OF ACTIVE COMPOUNDS FROM PEANUT SKIN

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BACKGROUND
Peanut (Arachis hypogaea) is a common crop cultivated almost all the parts of the world which contains edible seeds with health benefits. Peanuts are rich source of protein, vitamins and minerals, whereas the shell and skin contains phenolic compounds, flavenoids, carotene etc. It has been reported that peanut contains an anti-cancer agent resveratrol. This work focuses on the Analysis of active compounds from peanut skin and to examine its anti-cancer property.
METHODS
Qualitative analysis of peanut skin using gas chromatography-mass spectrometry showed the presence of various medicinally active compounds like azulene, farnasene, bisabolene. The Protein is chosen as CBX3 (Chromobox protein homolog 3). The Protein is chosen based on its regulation and expression in patients with Non-small cell lung cancer obtained from PDB with ID 3TZD.
PRELIMINARY RESULTS
All the compounds analyzed showed a good binding potential in the range from -11.36 kcal/mol to 13.50 kcal/mol. Docking studies revealed that the compound Beta-bisabolene, a sesquiterpene from peanut skin had the highest binding score of -13.50kcal/mol and hence can be a potential anti-cancer drug among other compounds.
PRELIMINARY CONCLUSION
The interaction of the bioactive compounds from the peanut skin extract may results in blocking the activity of the protein CBX3 in formation of non small cell lung cancer cells.
KEYWORDS: Peanut skin, Anti-oxidant, cancer, In-Silico study

OP-54

Antidengue potential of two medicinal plants *Pavetta tomentosa* and *Tarenna asiatica* (Rubiaceae) against Dengue viral cell line (C6/C36)

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Dengue Virus (DENV) infections are caused by four closely related viruses namely DEN-1, DEN-2, DEN-3, and DEN-4. They causes most common arthropod-borne viral disease in humans with 50–100 million infections per year. In the continuing search for an effective vaccine and anti-dengue drugs; two measures to prevent DENV transmission.

Hence, the aim of the present study was to screen the anti-dengue potential of crude leaf extract of two plants *Pavetta tomentosa* and *Tarenna asiatica*. Among the two plants, *P. tomentosa* acetone leaf extract have good antiviral property against Dengue viral cell line. In addition, the phytochemical nature of the plant reveals the presence of saponins, flavonoids and alkaloids in all the tested extracts of both plants. GC-MS analysis revealed Hexanedioic acid, Bis(2-Ethylhexyl) Ester (22.54) and 2,6,10,14,18,22- Tetracosahexane, 2,6,10,15,19,23- Hexamethyl-,(ALL-E)- (25.33) identified as two major phytoconstitutents in *P. tomentosa* and Tetracontane (23.580) is a major compound identified from *T. asiatica* acetone extracts. The functional groups of chemical compounds (aromatics, alkanes, alkyls and carboxylic acids) from *P. tomentosa* and *T. asiatica* were analyzed by FT-IR spectrum.

Keywords: *Pavetta tomentosa, Tarenna asiatica*, C6/C36, GC-MS, FTIR.

OP-55

Larvicidal efficacy and Chemical Constituents Analysis of *Strychnos nux-vomica Linn.* (Loganiaceae)

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Strychnos-nux vomica Linn (Loganiaceae) is a common medicinal tree used for the treatment of various diseases. This study was performing the larvicidal efficacy and phytochemical constituents analysis from the various parts of *S. nux vomica* by using ethyl acetate, acetone and water extracts (100, 300 and 500µg/ml). Among them, ethyl acetate extract of *S.nux-vomica* plant show the better larvicidal activity against *Ae.aegypti*, with the best LC_{50}- 606.206 and LC_{90} - 958.855 µg/ml values, within 24 hrs exposure period. The preliminary phytochemicals of *S.nux-vomica* revealed the leaf contains phenols in all the tested extracts. Glycosides were present in seed coat extracts and Tannins content was abundantly present in leaf and fruit pulp extracts. Alkaloids and amino acids were absent in all the tested extracts. The GC-MS analysis of *S. nux vomica* shown several major and minor compounds based on the retention time, molecular weight and scan range.

Keywords: *Strychnos-nux vomica*, Leaf, Fruit Pulp, Seed, Seed coat, GC-MS

OP-56

AgNPs coated handmade paper/pads from solid agro waste and its applications

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Solid waste is one of the biggest problems of civil society. Application of modern technology in fusion with science would be a solution for the problem. Green nanotechnology based approach using waste materials have been accepted as an environmental friendly and cost effective approach for diverse eco-friendly applications. In the present work, agriculture wastes like sugarcane bagasse, banana fibres and orange peels were used to produce handmade paper, which is alkali-free and non- pollution manufacturing process. The quality of handmade paper was checked by determining GSM, pH, thickness, bulk and solubility of the handmade paper. The handmade paper was further coated with green silver nanoparticles synthesized from Aloe vera leaf extract

with dextran produced by mutant strain of Weissella confusa as a reducing and stabilizing agent and checked for their antibacterial activity against Staphylococcus, Bacillus, E. coli, Pseudomonas, Klebsiella species and antifungal activities against Fusarium, Penicillium, Trichoderma, Pythium and Aspergillus species respectively. The maximum activity was observed against Staphylococcus sp. and Aspergillus sp. with a zone of inhibition of about 1.2cm and 1cm respectively.

Therefore, the produced handmade paper may serve as an alternative biodegradable packaging material for one time use or short-duration packaging requirement for low shelf-life products like fresh fruits and vegetables. Thus, the handmade paper serves as an eco-friendly substitute for the use of non-renewable and non-biodegradable plastic-based packaging materials, as the study of recyclable and biodegradable polymers is a fascinating and developing area in packaging science.

Keywords: Biowastes, handmade paper, green silver nanoparticles, antimicrobial activity

OP-57

Betula utilis extends lifespan & attenuates age related amyloid-beta induced toxicity in Caenorhabditis elegans

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Betula utilis (BU) is an important medicinal plant that grows in high altitudes of the Himalayan region (4,500 m), and has been utilized traditionally due to its antibacterial, hepatoprotective, and anti-tumor properties. Here, we demonstrated the longevity and amyloid-β toxicity attenuating activity of *B. utilis* ethanolic extract (BUE) in *Caenorhabditis elegans*. Amyloid-β, one of the hallmarks of Alzheimer's disease, is toxic to neurons and causes cell death in the brain. Lifespan of the worms was observed under both the standard laboratory and oxidative and thermal stress conditions. The non-targeted qualitative and quantitative analysis of the ethanolic extract of (BU) was performed through Gas Chromatography-Mass Spectrometry with three replicates. Chromatographic separations of metabolites were carried out using the characterization of individual metabolites. The potential of BUE was also observed on the several parameters like toxicity assay, lifespan analysis, stress resistance assay, pharyngeal pumping analysis, chemotaxis behavior assay, measurement of intracellular ROS, analysis of alpha-synuclein accumulation, worm paralysis assay, aldicarb sensitivity assay, lipofuscin assay and green fluorescent protein visualization assay. Our results showed that BUE (50 µg/ml) can enhance the mean lifespan of *C. elegans* by 35.99% extensively and improved its endurance under stress conditions. The BUE also reduced the levels of intracellular reactive oxygen species (ROS) by 22.47%. A delayed amyloid-β induced paralyses was observed in CL4176 transgenic worms. Interestingly, the BUE supplementation was also able to reduce the α-synuclein aggregation in NL5901 transgenic strain. Gene-specific mutant studies suggested that the BUE-mediated lifespan extension was dependent on *daf-16, hsf-1,* and *skn-1* but not on *sir-2.1* gene. Furthermore, transgenic reporter gene expression assay showed that BUE treatment enhanced the expression of stress-protective genes such as *sod-3* and *gst-4*. Present findings suggested that ROS scavenging activity, together with multiple longevity mechanisms, were involved in BUE-mediated lifespan extension. Thus, BUE might have potential to increase the lifespan and to attenuate neuro-related disease progression.

Keywords: Aging, Neuroprotection, Alzheimers, Parkinsons, *C. elegans*

OP-58

Bioassay-guided isolation, identification, and evaluation of β-boswellic acid from Boswellia serrata Roxb. (oleo gum resin) against cancer cell lines

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Background: There are no in-depth studies on the extracts of the gum resin of Boswellia serrata (BS), which contain many bioactive phytoconstituents and responsible for biological potential. The goal of this research plan was the isolation and purification of most active compounds from the gum resin of BS via bioassay-guided fractionation based on anticancer activity.
Methods and preliminary results: The silica gel column chromatographic techniques with different solvent systems were used for the separation of the constituents of the hexane extract of BS gum resin. The structures of the isolated compounds were assigned based on various spectroscopic analysis (high-resolution mass spectrometry,[1]H NMR, and[13]C NMR) and its comparison with literature data. The cytotoxic effect of all crude extracts, and isolated the compound β-boswellic acid was done through MTT assay. Among all the tested cancer cell lines β-boswellic acid showed best activity against Prostate cancer (PC3) with an IC50 value of 35 μg/ml.
Preliminary conclusion: The isolated β-boswellic acid from the gum resin of BS, showed strong anticancer activity against prostate cancer (PC3) in vitro and may be further developed as treatment regime for cancer.
Keywords: β-boswellic acid, Boswellia serrata , gum resin, HPLC, NMR, cytotoxicity.

OP-59

A STUDY OF FISH DIVERSITY OF BALAISUTI BEEL, KALGACHIA, BARPETA (ASSAM)

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The beels represent unique ecosystem with immense ecosystem services. Without evaluating potentials the beels are indiscriminately explored causing great depletion of the resources. The present investigation is the study of the BalaikhutiBeel (90o52’35.37” E to 90o52’35.37” E & 26o20’54.30” N to 26o21’26.54” N, msl: ca. 46 m; area 0.5 km2) of Barpeta with special reference to the piscian resources. Fishes are collected from 10 different spots of the beel twice every month from January to May 2017 using cast net of 3 m in length, 10 mm mesh size and circumference of 15 m. Fish catch (no. of each species)per effort is recorded and the frequency of occurrence, density, diversity, dominance and species richness are calculated. Further, gears used for fishing in the beel by the fishermen are also recorded. We recorded 49 species of fishes from the beel of which small size fishes constitute the majority part. The most abundant species recorded is Puntius sophore, followed by Labeo calbasu and Amblypharyngodon mola; while the least abundant species was Mastacembalus armatus. Aspidoparia morar, Rasbora rasbora and Esomus danricus showed 100% occurrence frequency. Esomus danricus, Puntius sophore and Anabas testudineus exhibit high density while very low density is displayed by Mastacembalus armatus and Aorichthys seenghala . The study also reveals a relatively

high species diversity (H'= 3.15) of the beel and the dominance (D = 0.03) is found to be low, indicating a healthy system supporting species rich piscian fauna (R= 5.41).
Threat to the ichthyofauna has been perceived as uncontrolled fishing throughout the year harvesting even the ripe females of the breeding season and fingerlings. Moreover, intense human activities in the shallow part of the beel and in the shoreline pose as a threat to the pristine environment of the beel. The presence of five exotic species in the natural system specifically the highly predatory Clarius gariepinus is also critical for the ecosystem

OP-60
Agricultural Biotechnology: A Review
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Biotechnology offers scientific techniques in which biological resources can be efficiently utilized without placing additional demands on land or water to boost yield or enhance quality of product and life. Agricultural biotechnology is one of the tool in the portfolio of biotechnological options. In a country like India which has 17.5% of the world's population and 2.3% of worlds land area, agricultural biotechnology can play a significant role in fulfilment of the nutritional requirements of its people. In agricultural biotechnology disease resistant, insecticide resistant, pathogen free plants are produced with high yield and nutritional quality. Molecular breeding of crops has been done for improving tolerance to abiotic stresses such as salinity, drought, and oxidative stress. Beyond cultivation, agricultural biotechnology also provides protection to soil, farmers and consumers from exposure to chemical residues. It also provides economic opportunities in the area of biopesticides and biofertilizers that have the potential to help the farmers move up the value chain. However inspite of advancements in agricultural sector, still the country is not free from hunger, disease and poverty. Various controversies exist in biotechnological field. Worried environmentalists, suspicious consumers, traditional farmers, and other have protested it. Many nations have made laws to restrict biotechnological research in certain areas. But despite such controversies and restrictions biotechnology is still making progress in many fields. Improvements are invited at policy level. Awareness and persuation of farmers is necessary for the adoption of new technological advancements. Beneficial aspects should be widely circulated in public. Besides, regulations are necessary to protect the public health and safety, conserve natural resources and address ethical issues.

OP-61
Hazardous Air Pollutants (HAPs) and its implications on Health and Environment
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Hazardous air pollutants are such pollutants that cause or can cause cancer or other severe health effects, such as reproductive or birth defects, or harmful environmental and ecological effects, also known as toxic air pollutants or air toxicants. Air pollution, not only because of its effect on climate change, but also its impact on public and individual health due to rising morbidity and mortality, is one of the greatest scourges of our era. In humans, there are many toxins that are essential factors in disease. Among them, particles

of variable but very small diameter, Particulate Matter (PM), enter the respiratory system by inhalation, causing respiratory and cardiovascular disorders, reproductive and central nervous system dysfunctions and cancer.
While ozone plays a protective role in the stratosphere against ultraviolet irradiation, it is harmful in high concentrations at ground level, affecting the respiratory and cardiovascular systems as well. In addition, air contaminants that are toxic to humans are called nitrogen oxide, Sulphur dioxide, volatile organic compounds (VOCs), dioxins, and polycyclic aromatic hydrocarbons (PAHs). When breathed in at high levels, carbon monoxide can also provoke direct poisoning. Heavy metals such as lead, when ingested into the human body, can lead to direct poisoning or chronic toxicity, depending on exposure. Diseases from the above-mentioned compounds primarily include respiratory disorders such as Chronic Obstructive Pulmonary Disease (COPD), asthma, bronchiolitis, lung cancer, cardiovascular events, dysfunction of the central nervous system, and skin diseases. Last but not least, as natural disasters do, climate change arising from environmental contamination impacts the geographical distribution of many infectious diseases. Public awareness, combined with a multidisciplinary approach by science experts, is the only way to resolve this issue; national and international organizations have to address the emergence of this challenge and propose sustainable solutions.
Keywords: HAPs, PMs, PAHs, VOCs, COPD

OP-62
Understanding GPCR allostery via Community network analysis
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G protein-coupled receptors (GPCRs) are one of the largest family of receptors present in humans. Their structure consists of 7 transmembrane helices which are connected by by 3 intracellular and 3 extracellular loops . It has an extracellular N-terminal and an intracellular C-terminal. They are activated by various exogenous and endogenous ligands. Upon activation, a conformational change occurs in the receptor which activates the G-protein to trigger signaling. Therefore, GPCRs are allosteric proteins which sense the external signal and then respond intracellularly.
There are very few crystal structures of GPCRs which are available and also not much studies have been done on the receptor. This leads to many questions which need to be answered about the functional mechanism and dynamics of the receptor .
Our work focuses on conformational dynamics & allostery in GPCRs mainly Cannabinoid receptors. Earlier studies using Molecular dynamic simulations and Community network analysis have shown that there are subtle differences in the communication pathway from extracellular side to intracellular side upon various ligands binding in the orthosteric site.
This study will pave the way to design the ligands with specificity.
Keywords: GPCRs, Allostery, Community network, Molecular Dynamic Simulations.

POSTER PRESENTATIONS

PP-1

Effect Of Green Synthesized Silver Nanoparticles On Post Harvest Shelf Life Of Horticultural Crops

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Production of various horticultural crops acts as a good source of income for a large number of producers in most of the developing countries around the world. But, extensive postharvest losses make their production unprofitable. Various pre-harvest and postharvest handling practices are performed nowadays to combat this bottleneck. In our study, we examined a novel postharvest treatment where we performed green synthesis of silver nanoparticles from leaf extract of *Azadirachta indica* (neem) and sprayed it on different horticultural crops like *Citrus reticulata*, *Musa acuminata* and *Solanum lycopersicum* in variable concentrations and checked its efficiency on postharvest shelf life. Absorbance peak in UV visible spectrophotometer within the range of 386-410nm at different concentration of the extract confirmed the formation of silver nanoparticles. After four days of spraying of the silver nanoparticle extract, the crops started showing noticeable physical changes. The control samples of banana started to rot on day 4 , on day 7 orange and tomato control started to rot. And only neem extracted started to rot on orange(11^{th} day), tomato(25^{th} day) and banana(22^{nd} day) whereas the samples treated with silver nanoparticle extract remained healthy without any fungal attack till one month. Further we went for the isolation and identification of the fungus from the diseased crops by culturing the diseased samples on potato dextrose agar plates. The pure cultures obtained were identified morphologically. Putatively identified predominant fungus isolated from Orange was *Penicillium digitatum*, Tomato was *Mucor sp* and banana was *Fusarium sp*. Spores of all three fungus were evaluated by using haemocytometer After calculation we got *Penicillium digitatum*(4.2*10^5 spores/ml),*Mucor sp*(3.44*10^5 spore/ml) and *Fusarium sp*(2.92*10^5 spores/ml).Thus, from our investigation we can conclude that green synthesised silver nanoparticle acted as a very strong alternative postharvest handling practice, since it protected various horticultural crops from spoilage or fungal attack for extended period.Therefore, the efficacy of green synthesized nanofomulation compatible with the consumer will provide a platform for the maintenance of perishable horticultural crops in future.

Keywords: Green synthesis, Silver nanoparticles, Azadirachta indica, Post-harvest, Shelf life, Horticultural crops.

PP-2

Marine Algae In Biofuel Production- A Review

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Biofuel is biodegradable as it emits less carbon dioxide and nitrogen dioxide. Algae have emerged as one of the most promising sources for biofuel production with potential to replace the fossil-based fuels. In biofuel production, upstream process includes cultivation methods, molecular techniques and micro algae-bacterial infections whereas downstream process includes harvesting and drying, extraction, purification and bio chemical conversion. Marine algae have relatively high photon conversion efficiency and rapidly synthesize biomass through assimilating abundant resources in the nature such as sunlight, carbon dioxide and inorganic nutrients. It improves the air quality by absorbing atmospheric CO_2, and utilizes the minimal water. Microalgae biofuel production have low concentration of biomass in the culture and low oil content from the conventional agricultural practices, micro algae farming is one of the most costly and complicated. Microalgae has low biomass production, low lipid content in the cells and small size of the cells that makes harvesting process very costly. These difficulties can be minimized or overcome by the improvement of the harvesting technology. The Catalytic processes are more appropriate in converting the biomass to biodiesel, especially nano catalysts which have the good capacity in improving the product quality and attaining the best operating conditions. Biofuels have potential to contribute to a substantial production in the overall greenhouse gas emissions.

Keywords: Biofuel, microalgae, Greenhouse gas, biomass, upstream, downstream

PP-3

Metal Removal (Pb And Fe) Efficacy Of Multi-Metal Tolerant Bacteria *Bacillus Subtilis* A1-1

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Industrial developments and human activities are the consequence of heavy metal entering in to the environment and become threaten to ecosystem. A bacterial strain from metal polluted mining soil has been isolated and metal tolerance (Cu, Cr, Pb, Zn, Fe, Mn and Mg) effect was screened by growth inhibition method. Different concentrations of each metals (100 µg/ml to 1200 µg/ml) were used for primary screening and the study revealed that, the bacterial strain A1-1 showed highly tolerant (above 1000mg/l) to Fe and Pb than other metals. The order of metal tolerance was Fe>Pb>Mn>Mg>Cu>Cr>Zn. Tolerant bacterial isolate was identified as *B.subtilis* A1-1 [GenBank Accession Number: KR819401] by 16S rRNA sequencing. The removals of metals were studied by biosorption method under controlled conditions in laboratory resulted the bacteria exhibit

86.45% and 90.74% remediation to Pb and Fe respectively. These results suggest that metal tolerant (Pb & Fe) bacteria *B.subtilis* A1-1 could be employed for the potential use of detoxification of metals in multi metal contaminated environment.

Keywords: Heavy metal, *B.subtilis*, Biosorption, 16S rRNA sequencing,

PP-4

Overview of Structure Activity Relationship and Binding Affinities of Angiotensin Receptor Blockers (ARBs)

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Background: Ang II is a vasoconstrictive peptide hormone that shows a wide variety of physiological actions. Ang II is the primary cause of inducing hypertension. In order to deal with hypertension ACE inhibitors and ARBs are used worldwide. These ARBs exert action by blocking the binding of Ang II on AT1 receptor. Peptide ARBs are rarely used as compared to non-peptide due to low bioavailability, short duration of action and partial agonistic activity. Moreover, the structure activity relationship played an important role in designing the more potent ARBs.

Methods and Preliminary results: The data for the SAR of ARBs is compiled from the literature available. It has been seen that the basic pharmacophore of ARBs should have a heterocyclic ring system, an alkyl side chain and an acidic group on the biphenyl ring. All the groups which are forming the pharmacophore are responsible for the binding of the compound to the Angiotensin receptor. The higher binding affinity of the Irbesartan is because of the cyclopentyl group present in Irbesartan which forms Hydrophobic interaction with the Hydrophobic pocket of AT1 Receptor whereas the good binding affinity of the Telmisartan also can be explained by the COOH group present at the 2 position of Biphenyl methyl group where as other ARBs contain tetrazole group. On the other hand Valsartan represents a nonheterocyclic AT1 Receptor selective antagonist in which the imidazole of losartan has been replaced by an acylated amino acid. The acylated amino acid leads to higher binding affinity of Valsartan.

Preliminary conclusion: It has been concluded that the small modification/difference in molecular structure of the ARBs changes the binding affinity of the various ARBs and hence affects the efficacy and potency of a particular ARBs.

PP-5

The Potential of Living Plants Harnessing Bio-Electricity using Bio-Photovoltaic Device Technology

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The present study, Designed and constructed the low-cost and eco-friendly bio-photovoltaic (BPVs) device technology by using biological materials. The production of green electricity from BPVs device helpful in the reduction of environmental pollution as

compared to fossil fuel energy generation. The BPVs device is the unique properties of plant-microbes relationship in the rhizosphere region of a plant and converts solar energy into electrical energy *via* photosynthesis process. This is a sub-disciplinary subject of Plant-Microbial Fuel Cell and Microbial Fuel Cell. Bio-Photovoltaic device (BPVs) is prepared for the electricity produced through the organic framework which *Cynodon dactylon* (grass) and electrochemical active bacteria (EAB) by the mechanism of bioelectrochemical device. This means that they convert chemical energy into green electricity with the assistance of biological materials as shown in Figure 1. It was found that the single chamber of the BPVs device with grass and without grass (control) appeared under the environmental condition was observed voltage. The potential difference was estimated with maximum voltage produced 0.54 to 0.61 ±2 Volts at 10 days of incubation period. While the other set of without grass recorded was power output 0.34±2V at 10 days respectively. Further, to formulate in the grass *e*-table setup in BPVs device for production of green electricity. The Gras *e*-table consisted of 12 BPVs device pots with an arrangement of parallel and series connectivity in complete circuits. It was recorded that maximum potential of 4.24 ± 0.2 Volts was produced in 30 days of the incubation period. The aim of the present study focused on harnessing bioelectricity using bio-photovoltaic device which also resolves energy crisis issues at present time and providing sustainable energy without harming the plants and environment.

Key-words: Bio-Photovoltaic Device, *Cynodon dactylon*; Grass *e*-table; Renewable Electricity.

PP-6

Current Trends in Antibiotic Resistance

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Antimicrobial resistance is an important concern for the public health authorities at global level.Patients with infections caused by Antibiotic drug-resistant bacteria are at increased risk of worse clinical outcomes and death, and consume more health care resources than patients infected with non-resistant strains of the same bacteria.

Resistance in *Klebsiella pneumoniae* – common intestinal bacteria that can cause life-threatening infections – to a last-resort treatment (carbapenem antibiotics) has spread to all regions of the world. *K. pneumoniae* is a major cause of hospital-acquired infections such as pneumonia, bloodstream infections and infections in newborns and intensive-care unit patients. In some countries, because of resistance, carbapenem antibiotics do not work in more than half of people treated for *K. pneumoniae* infections.

Resistance in *Escherichia coli* to one of the most widely used medicines for the treatment of urinary tract infections (fluoroquinolone antibiotics) is very widespread. There are countries in many parts of the world where this treatment is now ineffective in more than half of patients.

Resistance to first-line drugs used to treat infections caused by *Staphylococcus aureus* – a common cause of severe infections in health facilities and communities – is widespread. People with MRSA (methicillin-resistant *Staphylococcus aureus*) are estimated to be 64% more likely to die than people with a non-resistant form of the infection.Colistin is the last-resort treatment for life-threatening infections caused by Enterobacteriaceae, which are resistant to carbapenems. Resistance to colistin has recently been detected in several countries and regions, making infections caused by such bacteria untreatable.

In developing countries like India, recent hospital and some community based data showed increase in burden of antimicrobial resistance. Research related to antimicrobial use, determinants and development of antimicrobial resistance, regional variation and interventional strategies according to the existing health care situation in each country is a big challenge. Recent data from Google search, Medline and other sources were collected which was reviewed and analyzed that hospital based studies showed higher and varied spectrum of resistance in different regions while there are limited number of community based studies at country level. There exists lacunae in the structure and functioning of public health care delivery system with regard to quantification of the problem and various determining factors related to antimicrobial resistance. There is an urgent need to develop and strengthen antimicrobial policy, standard treatment guidelines, national plan for containment of AMR and research related to public health aspects of AMR at community and hospital level in India.

Keywords: AMR, Challenges, Worldwide, Problem burden, Antimicrobial policy.

PP-7

Synthesis, Characterisation and Antimicrobial Potential of Benzimidazole Derivative Containing N-Methyl Piperazine Moiety

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New therapeutic options are required due to emerging infectious diseases and increasing number of multidrug resistant microbial pathogens. Benzimidazole and piperazine heterocyclic nucleus are active pharmacophores. Hence, this paper highlights the synthesis of new benzimidazolyl derivatives namely 2-phenyl-4'- (N-methyl piperazino)-aryl/succinimido substituted benzimidazoles. Derivatives are characterized by elemental analysis along with IR, ^{1}HNMR and Mass spectral analysis. The synthesized compounds are evaluated for their antibacterial and antifungal activities. These derivatives show medium to high efficacy against selected pathogens.

Keywords: Benzimidazole, Piperazine, Antibacterial activity, Antifungal activity

PP-8

Ice binding proteins: Functions and applications

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Periodic or continuous exposure to very low temperatures in psychrotolerant inhances production of few specific molecules that prevent them from freezing, called Psychrophiles. Psychrophiles is capable of synthesizing some important proteins & peptides that can regulate growth of ice crystals and these are named Ice Binding Proteins (IBPs). Ice binding proteins are specialized proteins that are less popular but extremely crucial. Antifreeze Proteins (AFPs) are among them only which enhance the formation of big ice grains inside the cells which damage cellular organs or cause death of cell. The unique properties of ice recrystallization inhibition (IRI) and thermal hysteresis (TH) have become one of the promising tools in industrial applications like cryobiology, food storage, and others. This review summarizes the Functions and applications of the large group of IBPs.

Keywords : Cryopreservation, Antifreeze proteins, Ice binding proteins, Psychrophile

PP-9

Differential Performance of Predators on selective Prey

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Prey-predator model is the key to assess performance of a predator against a prey. This model has always been in a tendency to exemplify the limits and delimits of these two towards each other. The interaction between prey and predator is also affected by the nearby environmental biotic and abiotic conditions. A prey suitable for a predator is not necessarily proves suitable for another predator. Vice-versa a predator performing better while feeding on a prey is also not necessarily proves its same performance for another prey. To test this hypothesis, present study included aphid (Homoptera: Aphididae) as prey species for two different Ladybird beetles (Coleoptera: Coccinellidae). The criterion to assess this hypothesis encompassed growth, development, survival rate, mortality and weight of adults. Results revealed that the parameters in terms these parameters actually varied for both the predators drastically. Both the predators performed differentially from each other even when they were provided with same biotic and abiotic controlled laboratory conditions. Thus the current study conferred that nutritive contents obtained by a common prey can induce the predators to perform differentially including their overall fitness and vigor.

Key words: Prey, predator, aphid, ladybird beetle, development, survival.

PP-10

Actinomycetes Mediated Targeting of Drug Resistant *Escherichia Coli* Pathogens for Diarrheal Diseases

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Diarrhea is the condition where the patient tends to loose watery motions. And this can be caused by bacterial, parasites or viruses. This is due to consumption of spoiled or infected food and water. Some of the bacteria that causes diarrhea are *E.coli*, *Campylobacter*, *Salmonella* species *and* viruses such as Nor virus, Rotavirus, Sapovirus, and Astrovirus. This condition can be overcome by oral rehydration solutions and isotonic intravenous fluids. Secretion of chloride in the gastrointestinal tract and this makes the stool weight decrease. Actinomycetes is an unicellular bacteria which rises filaments of branches , where it is a heterogenous bacteria. They are abundantly found in soils and marine water. The size of Actinomycetes is 1-2 micrometer in diameter. The present study is to check the Anti-diarrheal activity against the diarrheal causing pathogen *E.coli* with the secondary metabolites of Actinomycetes. The anti-diarrheal drugs Azithromycin, Rifaxacin, Fluoroquinolones, and sub-classes of Fluoroquinolones Levoflaxin and Ciproflaxin are used as a reference compounds for our study.

Keywords: Diarrhea, Actinomycetes, Anti-diarrheal activity.

PP-11

Biodiversity Conservation Through Biotechnology

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Biodiversity means the diversity of life. Usually the measure of biodiversity is genetic diversity, a measure of how many distinct genetic species there are in an area or population. These are sometimes called genetic resources, because they can be used as the starting point for new products or processes. Life on Earth today consists of many millions of distinct biological species. The United Nations declared the year 2010 as the "International Year of Biodiversity".

The short answer is that the biotechnology industry, whether in agriculture, medicine or any other field could not exist without the tremendous genetic variety found in nature . Biodiversity can either be a stock of information for the biotechnology industry or it can be the primary stock itself. The biotechnology industry can either develop new products based on observed characteristics (or phenotype) of a particular genetic resource, or it can be directly such biological or genetic resources for a particular purpose. Thus, biotechnology can best be defined as "any technique that uses living organisms or parts of organisms to make or modify products, to improve plants or animals or to develop microorganisms for specific uses".

Keywords - Biodiversity, Conservation, Biotechnology

PP-12

An Investigative Study on Growth of Light of Algaas/Gaas in Nanotechnological Life Sciences

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In this exploring type research letter an investigative study on growth of modal confinement light gain of AlGaAs/GaAs type ternary nanomaterial in nanotechnological life sciences has been done by computational type nanotechniques under the number of NGILs (Nano Graded Index Layers). This type innovatively research letter provides a substantial contribution in nano type biological sciences because of their unique utilities. The spectral performances of growth of modal type light gain with energies of light photons in eV of AlGaAs/GaAs has been calculated and computed by spectral performances. In these spectral performances the peaks of spectra have been achieved at energy of photons ~1.5 eV correspondence wavelengths of light photons ~830 nm have been illustrated by appropriate graphical curves under various types of NGILs. Next the modal type behaviours of transparency energies of light photons with different types of NGILs for proposed nano structure have been calculated by graphical results. Next, these type light of wavelengths ~ 830 nm have mostly been utilised in the optimization of a proper combination of higher penetrating abilities and cellular type interactions. Hence this wavelength's light source has also been used in the treatment of various sensitive type skin diseases in the nanotechnological biosciences and medical sciences.

Keywords: Growth of modal type light gain, Transparent photon energy, NGILs, AlGaAs, GaAs.

PP-13

Importance of natural products in present and future era

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Plants, herbs and microorganism have provided abundant sources of natural products. Natural products used for foodstuffs, colouring matters, medicines or stimulants as old as mankind. These chemicals are obtained by metabolic processes of the plants and classified in two categories as primary and secondary metabolites. Primary metabolites are directly obtained by photosynthesis process e.g. carbohydrates, proteins, amino acids, fatty acids, vegetables, oils etc. Secondary metabolites are biosynthesized from primary metabolites e.g. terpenes, steroids, alkaloids, acetogennis etc. Secondary metabolites play a distinguished role in all manifestations of human behaviour. Natural products are isolated and identified by using chromatographic and spectroscopic techniques. These natural products have been developed and modified as commercial products for human medicine, animal health, and plant crop protection. Molecular genetics and medicinal chemistry approaches were applied for the further modification and improve the activities of natural products. Situation of covid-19 pandemic pushed all chemists for the discovery of new and novel secondary metabolites and their modification.

PP-14

Current Trends of Indian Biodiversity

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The biodiversity of Indian sub continent is one of the richest in the world owing to its vast geographical area, varied topographic and climatic conditions. India is one of the 10^{th} mega diversity country in the world and 4^{th} largest in Asia. It has just constituted 2.4% land area in the world, but containing 18% human population, 18% livestock population, 7% plant diversity, 7.6% mammalian species ,12.6% avian (birds) species, 6.2% reptilian species, 70% tiger population, 60% elephant's population, 4.4% amphibian species, 11.7% fish diversity, 10% bamboo diversity, 7% 7angroves forest, 50% aquatic plants of the world.

India harbors more than 49,441 plant species including 30775 lower plants and 18,666 higher plants. Out of total 49,441 plant species, 11,554 (23.36%) plants are endemic. Out of total 49,441 plants, 18,666 (37.75%) are flowering plants which represent more than 7 % of the known flowering plants of the world. Of these 4,303 (23%) plants are endemic, confined to a restricted Indian boundary. There are four main centers of endemism in India are Himalaya, Peninsular India and Andaman & Nicobar group of Islands. Out of 36 hotspots of the world, four hotspots viz. Himalaya, Indo-Burma, Sundalands and Western Ghats are found in India. India has been the center of origin of cultivated plants. 167 species of crops, 375 species of wild relatives of rice, pulses, millets, vegetables fruits and fibres and 255 breeds of animals such as cattle, sheep, goat, camel, horse, donkey, poultry found in India. It is regarded as a store house of primitive flowering plants mainly found in North-east region of the country. There are 131 species of primitive flowering plants found in North-east India. On the basis of the presence of large number of primitive

angiosperms, Takhtajan (1969) designated this region as the 'Cradle of Flowering Plants'. N. I. Vavilov (1951) identified 8 centres of origin of crop plants and India was known as "Hindustan Centre of Origin of Cultivated plants". India has been primary centre of domestication for rice, sugarcane banana, tea, mango, cucumber, citrus, jute, minor millets, vignas, brassicas, alocasia, colocasia, cardamom, zinger, black pepper, turmeric, bamboos etc. But our rich biodiversity is being lost by various anthropogenic, developmental activities coupled with natural calamities. Although, for conservation of biodiversity, various efforts have been made by Govt. of India through establishing national parks, wildlife sanctuaries, biospheres reserve etc. However about 10% species of flowering plants are threatened. In the present paper details will be illustrated during presentation.

PP-15

Microalgae: Nutraceuticals and Future Food

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With increasing world population, there is increase in food demands. Due to the diverse nutritional requirement of public and to overcome deficiency in ordinary diet, microalgae are considered as low cost dietary supplements with many health benefits. Microalgae are not only abundant in sea but can also be cultivated in terrestrial water in large quantities. Due to their potential, microalgae have become some of the most promising and innovative source of food and functional products. The current market values for these products are very high. The upcoming sections will bring into focus the use of micro-algae as a potential source of nutraceutical because micro-algae can produce a number of bioactive biomolecules to improve lifestyle related disorders and food.

Keywords: Microalgae, nutraceuticals, innovative food, health benefits

PP-16

Biodegradable Nanotubes to minimize Pollution

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Pollution a major critical problem on the earth due to Over Population, Urbanization, Technological advancement, Industrialization, Over exploitation of natural resources etc., which is degrading the Life of all living organisms to sustain on earth. The preventive measures are very meagre which are unable to decrease the pollutants to maximum. Recent advancements in nanotechnologies may help to decrease the pollutants to some extent. One such Nano material is Biodegradable Nano Tubes (BNTs). BNT is a carbon material which is significantly utilized for the potential applications, large-scale synthesis. BNT is a tubular form with a diameter as small as 0.4 nm and length from a few nanometers to a millimeter. "Because of their small size, the nanotubes selectively capture and retain small gas molecules in their interior. The adsorption of a molecule inside another molecule offers unique opportunities for the control of matter on the nanometer scale." The structure of CNT consists of graphitic sheet (called graphene) rolled up in the form of cylinder. Carbon nanotubes (CNT) are unique one-dimensional

macromolecules which have high thermal resistance and chemical stability. Adsorption through CNT as the adsorbent in the treatment of drinking water and sewage polluted with pharmaceutical, petroleum, heavy metal, and leachate pollutants. Hence CNTs play a major role in waste water treatment and air pollution monitoring. In waste water treatment, CNTs serve as sorbents, nanofilters and antimicrobial agents to remove organic and inorganic contaminants, as well as pathogenic microorganisms. In air pollution monitoring, development of CNT-based gas sensors results in high sensitivity with prompt sensor response toward pollutant gases. Biodegradable CNTs can reduce the pollution to maximum when synthesized from natural plants and may help sustain life on earth.

Keywords: Biodegradable Nano Tubes, Carbon nanotubes, Natural resources, Pollution

PP-17

Changes in Haematology and inhibition of Acetylcholinesterase and Glutathione-S-transferases Activity upon exposure to Dichloromethane in *Oreochromis mossambicus*

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The Dichloromethane is an organic chloride which finds extensive uses in several industries. There are several reports that supports the health hazards caused by DCM. The present study deals with the aquatic toxicity of dichloromethane on Oreochromis mossambicus. The activities of glutathione-S-transferase and acetylcholinesterase enzymes were studied from the brain, muscle, liver and gills of the fish exposed to different concentrations of dichloromethane i.e., 730ppm, 760ppm, 790ppm for 96 hours. The LC50 value was found to be 760ppm and the results of haematological study at 760ppm reveal that the tissues have an elevated count of leukocytes and high amount of haemoglobin while the platelet count was less when compared to other concentrations. The results show that Dichloromethane may cause direct cellular injury in the brain, and suggest that AChE may be used as a bioindicator for toxicological studies. The results of liver histopathological study indicated the cellular alterations such as necrosis and the gills showed the lamellar fusion and congestion. Thus, haematological study reveal that the dichloromethane has a potentiality to induce oxidative stress and neurotoxic effects.

PP-18

A Comparative Analysis on Efficacy 0f Common Medicinal Plants in Arthritis Pain Management

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Background:

Arthritis is a very common debilitating disease which is characterized by profound joint pain, tenderness and stiffness. The changing sedentary life style is contributing towards early progression of this disease. The most common joint pain management methods include use of nonsteroidal anti-inflammatory medicines however their long term chronic effects on kidney and liver are well established. Now the focus is shifting towards use of

natural herbs and their mixed formulations for getting pain relief. There are a number of plant products known which help in joint healing and somewhat pain reduction. This review paper presents a comparative study of five commonly used plants Aloe vera, Boswellia, Eucalyptus, Calotropis and Ginger in arthritic pain management. The paper summarizes the various effective doses, the underlying mechanism (if known) and chondroprotective roles of above mentioned plants.

Methodology:

The scientific data bases containing peer reviewed journal papers and classical text books were consulted for investigating the effects of above mentioned five plants-based medicines. The key words included 'Phytomedicines', 'Plant extracts', 'Herbal formulations' for these plants. The doses with significant antiarthritic effect in clinical studies and chondroprotective doses in invitro studies were compared and potential molecular mechanism of different medicines were summarized.

Preliminary Results:

The results of the study presented the most effective doses of different plant based medicines and also investigated the molecular targets of the above medicines. The review paper has also summarized and compared the effects of in vitro studies and clinical studies.

Conclusion:

Various plant-based medicines are known for a long time as antiinflammatory agents in joint diseases. Their actual effective doses varies in different studies, moreover their molecular mechanism of working has been mostly obscure. The present review has been an effort to elucidate the role of some of the most commonly occurring herbs in joint pain and arthritis like conditions

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PP-19

An Acute Oral Toxicity Study of Aqueous Extract of Polyherbal Formulation in Albino Rats as per OECD Guideline 423

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Toxicology is defined as the study of harmful, poisonous and hazardous effect of drugs and other chemicals components found in plants. The present study has been under taken to study the adverse effects of aqueous extract of Polyherbal formulation (*Trigonella foenum-graecum*, *Withania somnifera, Butea monsperma*) and determine the LD50 to establish the safety of aqueous extract of Polyherbal formulation in female Albino Rats as per OECD guideline 423. All rats were administered orally with the aqueous extract of Polyherbal formulation in single dosage of 2000mg/kg body weight. All animal were observed for mortality, wellness parameters, behavioral changes and body weight for 14 days. Conclusively indicates the LD50 value of aqueous extract of Polyherbal formulation classified under category 5 as per OECD guideline 423. No mortality or any significant changes was observed at 2000mg/kg body weight. In the histopathological study of vital organs of Albino Rats there was no pathological changes observed in dose level of 2000mg/kg body weight. The present study promotes that an acute oral study of Polyherbal formulation was found to be a non toxic and safe drug in the tested experimental conditions.

Key words: - Polyherbal formulation, Toxicity, OECD 423, LD50.

PP-20

The implications of placental networking and vascular remodeling VEGF gene sequence variations as a vital factor to contribute in etio-pathogenesis of Recurrent Pregnancy Loss (RPL) in Kashmiri women (North India)

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Background: The purpose of the study was to investigate an association of vascular endothelial growth factor (VEGF) gene 1154G>A and 634G>C polymorphic variations between cases of recurrent pregnancy loss and full term fertile women in Kashmir valley.

Methods and Preliminary Results: The study included 200 women who experienced 2 or more recurrent pregnancy loss (along with 60 product of conceptions) and 240 healthy controls with 2 or more full term pregnancies from same ethnic and geographic background. The polymerase chain reaction-restriction fragment length polymorphism method was employed for genotyping.

In VEGF 1154G/A, homozygous AA genotype exhibited significant differences between case and control subjects (13.5% vs. 1.6%). The minor variant allele A frequency was quite significant in recurrent pregnancy loss cases (0.41) than controls (0.19) [$p<0.05$]. Further, homozygous genotype 'AA' showed significant difference among product of conceptions and cases ($p<0.05$). Only recurrent pregnancy loss cases with the multi-generation family history of abortions and those without any history showed significant differences of combined genotype GA+AA ($p=0.001$).

VEGF 634 G/C, CC genotype showed significant frequency in recurrent pregnancy loss cases than healthy controls, 14.5% vs. 9.2% respectively ($p=0.0001$). Variant VEGF 634C allele showed significant presence in recurrent pregnancy loss cases (0.52) than controls (0.32) [$p<0.001$)].

Preliminary conclusion: The study concluded that both variants VEGF 1154G/A and 634G/C play a vital role in an increased susceptibility for recurrent pregnancy loss and seems to impact the likely outcome of pregnancy in our population.

PP-21

Role of MNS16A VNTR polymorphic sequence variation of the TERT gene to confer risk in predisposition of bladder cancer

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Background: MNS16A VNTR of the hTERT gene acts as the regulator of hTERT promoter activity and has been shown to have a role in the predisposition of different

cancer. The current study aimed to demonstrate the genetic predisposition of MNS16A VNTR to bladder cancer in our region (Kashmir, North India).
Methods and preliminary results: The study included a total of 130 Bladder Cancer patients and 170 age and gender frequency matched healthy. Primer specific polymerase chain reaction (PCR) was used to genotype the different variants of VNTR alleles for MNS16A VNTR polymorphism. The short allele VNTR-243 (SS) genotype frequency was observed to significantly differ between cases (9.23%) and controls (3.52%) respectively [OR=3.08(CI=1.10-8.61), p=0.04]. VNTR-243 S allele was found significantly more in bladder tumor cases (28.46%) than controls (20.88%) with OR=1.5(CI= 1.03-2.19; p=0.03). Likewise, hTERT MNS16A LL genotype was distributed more in low stages as against high stages (60.29% vs. 39.70%) respectively [OR=0.7 (C.I; 0.3-1.6) p=0.5].
Preliminary conclusion: MNS16A VNTR short alleles (S) was found to confer risk for the bladder tumor in our population as compared to long alleles.

PP-22

Ethnobotanical Studies on Halophytes Growing in Tal Chhapar Wildlife Sanctuary of Rajasthan, India

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The Tal Chhapar wild life sanctuary lies in SujangarhTehsil of Churu district in the north-eastern part of Rajasthan. This area is protecting a good number of plants and animal species especially Black bucks. This region exhibits a great variety of geology, physiography, peculiar edaphic, climatic, biotic conditions and represents great Phytodiversity. The plants of this region are utilized for food, fodder, gums, resins, essential oils, dyes, fatty oils, condiments, spices, medicines etc. The present research study was carried out by ethno-botanical survey of this area. The present observation enumerates the halophytic diversity, many of which have been used by tribal communities in folk and herbal remedies since long. Total 10 halophytes belonging to 05 families were recorded. These are like *Chenopodium album* Linn.,*Chenopodium murale* Linn., *Haloxylon recurvum* (Moq.) Bunge ex Bioss, *Zygophyllum simplex* Linn., *Heliotropium curassavicum* Linn., *Portulaca oleracea* Linn., *Salsola baryosma* (Roem and Schult.) Dandy.,*Suaeda fruticosa* (Linn.) Forsk.,*Trianthema portulacastrum* Linn. and *Haloxylon salicornicum* (Moq.) Bunge ex Bioss. Due to over exploitation of these halophytic species their protection and conservation is very essential. At large scale, germplasm conservation can also be done through genetic manipulation and biotechnological approaches like tissue culture techniques.The conservation, cultivation and proper utilization of these plants is very necessary for economic as well as sustainable development of the country.
Key words: Ethnobotanical studies,Halophytes,Talchhapar Wildlife Sanctuary, Rajasthan

PP-23

Synergestic Effect of TiO_2 With Nanoparticles Exihibiting Photocatalytic and Antimicrobial Activity

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The Nanoparticles is upsurging in all disciplines and perceived to be a very good option for antimicrobial additives. The main advantage of employment of nanoparticles is based on their size which is identical to the size of the cells and can readily penetrate through the membrane with much ease. The chief molecular mechanism of nanoparticles is to create oxidative stress among the disease causing agents by altering their cellular functions along with that damages lipids, carbohydrates, proteins, and DNA. These nanoparticle are small elements present on the earth surface which are hard, nonporous in daily life are now receiving recognition for their role in reducing the spread of several nosocomial infections. In this work, we established the photo killing effects of 1% silver-doped titanium dioxide TiO2. The nanoparticles synthesized by liquid impregnation method were characterized using X-ray diffraction (XRD), Energy Dispersive Spectroscopy (EDS), and Scanning Electron Microscopy (SEM). The Ag-TiO2 nanoparticle coatings that have been applied on glass and venetian blind surfaces were effective in generating a loss of viability of two bacteria (Pseudomonas aeruginosa and Bacillus subtilis) after two hours of illumination under normal light in the visible spectrum. Such surfaces can be applicable to medical and other facilities where the potential for infection could be controlled.

Keywords: Noscomial infection, Ag-TiO2, Bacillus subtilis, EDS, Titanium dioxide.

PP-24

Detection of benzimidazole resistance in *Haemonchus contortus* using PCR-RFLP

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Anthelmintic drug resistance is a rising major threat for small ruminant production world-wide including in India. Due to the indiscriminate use of Benzimidazole group of drugs the resistance to these are increasing at the field level. Anthelmintic resistance in the major strongyle parasite of goats in Kerala was carried out using PCR-RFLP in L_3 of *Haemonchus contortus* obtained from copro culture where faecal material were collected from goats in various farms in Thrissur. Exsheathment of larvae was done by incubating them in 180 µl of sodium hypochlorite. Single unsheathed larvae were collected in PCR tube, frozen at -80º C and thawed at 37º C, thrice for 10 minutes each. Later, 7 µL extraction buffer (pH 8.0) was added. The tubes were incubated at 56º C for eight hours and proteinase K was inactivated by incubation at 95ºC for 20 min in a thermal cycler. The larval lysates were to be used as template DNA The point mutation in isotype *1β-tubulin* gene were the reason for benzimidazole resistance in the parasite. The BZ

resistance status of *Haemonchus* sp has been associated with three SNPs in the isotype *1 β-tubulin* gene at codons 167 (TTC to TAC; F167Y), 198 (GAA to GCA; E198A) and 200 (TTC to TAC; F200Y)). Semi-nested PCR was done to amplify a 451 bp product of the isotype *1 β-tubulin* gene with the three codons followed by RFLP with restriction enzymes Eco1051, HpyCH4V and HpyCH4III for genotyping *Haemonchus* sp. larvae at codons 167, 200 and 198, respectively. The most frequently identified polymorphism was associated with E198A, while F200Y was found to be the least common. Genotyping of *H. contortus* larvae using restriction digestion with Eco1051 for the detection of SNPs at codon 167 revealed the presence of both susceptible and resistant genotypes. In conclusion, RFLP-PCR is an ideal method to study the molecular epidemiology of BZ resistance in *H.contortus* of small ruminants and to detect the emergence of the resistance on the parasite.

PP-25

Impact of Genetically Modified Crops on Human Health

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Genetic engineering is a revolutionary new technology. Genetically modified crops have the potential to solve many of the world's hunger and malnutrition problems. Genetically modified crops are being produced that are resistant to pests, tolerant to herbicides and more nutritious. However, there are concerns about the safety of genetically modified crops. The concerns are that they may contain allergenic substances due to introduction of new genes into crops. The genetically modified crops available in the market intended for human consumption are generally safe because of potential for exposure of a large segment.

Keywords: GMO, Biotechnology, Genetics, Crops

PP-26

Shmb Technique For Mind Body Workouts Including Yogasanas

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Conventionally most of the techniques adopted in all types of Body Workouts including Yogasanas, lay main stress on Physical Body's position and movements only. Those techniques do not have fixed and standardized steps to incorporate Breath Control and Mind involvement while performing a particular exercise. Such a draw back hampers Exercise Benefit and reduces the practitioner's interest in the Exercise.

To involve One's Mind with adequate Breath Control along with Body Exercise or, Yogasana; I developed one SHMB recently. According to the developed technique, inhaling is done in multiple steps, keeping tongue tightly fixed with Palate, feeling the pressure of Breath in the skull. After holding the breath inside, the developed pressure is released in same number of steps as inhaled. Main physical Body exercise is to be done with breath held inside; while Mind's attention is to be kept on one's own self. Additionally, while performing SHMB Technique opening and closing of both fists are to

be done throughout Exercise which, produces acupressure on the various nerve sensitive points of palms.

The main advantage of holding breath has beneficial effect on the Neurological activities, Cognitional functioning and over all Central Nervous System. The acupressure developing on the Palms normalize the misfunctioning of important organs like Heart, Liver, Kidneys and Pancreas etc.

Concluding, primarily SHMB Technique steps are well standardized and fixed which, involves one's Self, Heart, Mind, Breath Control and Body all in union; while Conventional techniques are just mechanical operation of Physical Body only. It is primarily because of that reason SHMB produce 100% benefits as compared to about meager 20% benefit using Conventional Techniques. It would of interest to mention here that using SHMB Technique, I could reverse my Type 2 diabetes in just 2 months. Such and many other benefits needs be confirmed with more cases adequately.

PP-27

A Study On Effect Of Hazardous Wastes On Livestock Living Near Industrial Area, Rairu

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Background: Industries are major sources of pollution in the environment. Industrial pollution has been continued to be a major factor for causing the degradation of the environment around us affecting the water we use, the air we breathe and the soil we live on. Heavy metals present in industrial wastes can cause death of livestock. They are found to be the major source of acute and chronic lead toxicosis, fluorosis and pesticide poisoning, which have been recognized as major health hazards of pollution on livestock's health.

Methodology: The study included survey of the study area, collection of polluted water, detection of hazardous metals in sample and their effect on livestock health. The study will be helpful to reveal the effect of harmful effluents on animals particularly livestock found near the vicinity of industrial area.

Conclusion: There is urgent need for intensive study about such toxic substances and their impact on surroundings. In the present work efforts would be made to study effect of such heavy metals on livestock. The main thrust of the study is on the health status of livestock population, which is found to be severely affected by harmful industrial effluents.

Key words- Industry, heavy metals, livestock, toxic.

PP-28

A Systematic Review On Antimicrobial Activity Of *Alternanthera Bettzickiana* (Amaranthaceae) : A Valuable Herb

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Background :- Medicinal plants have been renowned for millennia and are highly reputable all over the world as a fashionable supply of therapeutic agents for prevention of diseases and aliments. For making disease free healthy life medicinal plants are the

nature's gift to human beings. Plants have tremendous potential for discovering new drugs of great benefit to mankind. *Alternanthera bettzickiana* belongs to the family Amaranthaceae and commonly known as calico-plant which is found in tropical area. The medicinal properties of *Alternanthera bettzickiana* are well known in the different systems of traditional medicine including Ayurveda.

Method :- Different extracts like acetone, chloroform, aqueous, petroleum ether and ethanol extracts of *Alternanthera bettzickiana* contains various phytochemicals like tannin, terpenoids, steroid, oxalate, phenols, flavonoids, diterpenes, alkaloids, carbohydrates, saponins, anthocyanin, leucoanthocyanin, Xanthoprotein, coumarin etc. The extracts were compared with standards antibacterial and antifungal drug like Amoxicillin and Ketoconazole respectively.

Results:- This plant shows antimicrobial activity against various Gram positive, Gram negative bacteria and fungi as compare to the standard drugs. This plant inhibits the growth and kills Gram positive bacterial species like *Staphylococcus aureus, Enterococcus faecalis*; Gram negative bacterial species like *Escherichia coli, Klebsiella pneumoniae* and fungi such as *Aspergillus niger* and *Candida albicans.*

Conclusion :- Therefore, it can be concluded that the *Alternanthera bettzickiana* is an important source of pharmacologically active compounds which could be used for the development of new herbal formulations . Further research and clinical trials have to be carried out to commercialize the potent antimicrobial drugs.

Keywords :- *Alternanthera bettzickiana,* antimicrobial activity, phytochemicals

PP-29

Study on Biological Activity Of *Polygala elongata*

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Polygala elongata has a medicinal property such as Antimicrobial, Antioxidant, Anticancer, Anti-inflammatory, Antidiabetic. The aim of the study to investigate qualitative phytochemical analysis of *Polygala elongate* the presence of phytochemical such as tannin, saponins, flavonoids, carbohydrates, proteins are confirmed in the plant extract using standard method. The biological activity of *P. elongata* such as antibacterial, antioxidant, anti-inflammatory was analysed. The antibacterial study confirms a good control for the growth of *E. coli* and *Pseudomonas aeruginosa*. Antioxidant and Anti-inflammatory activity were done using DPPH assay and HRBC assay respectively. The optimal percentage inhibition of plant extract was found to be 88.92% at 1000µg of concentration. Haemolysis percentage and protection percentage of plant extract was found to be 39.25% at 200µg and 75.63% at 1000µg of sample when compared to positive control respectively.

Key words: *Polygala elongata*, phytochemical analysis, Antibacterial, Antioxidant, Anti-inflammatory activity.

PP-30

Effect of an Organophosphate Chlorpyrifos On The Metamorphosis and Survival of The Different Developmental Stages of an Indian Toad *Bufo Melanostictus*

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Chlorpyrifos, an organophosphate, is commonly used insecticide in paddy cultivation at Kota region. The present study is focused to evaluate the impact of Chloripyrifos on the growth of different developmental stages of indian toad, *Bufo melanostictus* those used these paddy fields as spawning sites. Spawn samples were collected from the paddy fields situated at Talera, Digod and Kishanganj in June to July, in year 2015, 2017, 2018, 2019. After hatching, tadpoles were reared in aged water containing doses of Chlorpyrifos in the laboratory conditions. Five different experimental groups (each with 15 tadpoles) with 0.05mg/l, 0.1mg/l, 0.25mg/l, 0.5mg/l doses of Chlorpyrifos and control (dechlorinated tap water), were established every year to calculate the difference in the growth and the survival of tadpoles. These experiments demonstrated delayed metamorphosis and declined survival rate in the organisms. Comparative study of the experimental groups revealed that 0.5mg/l Chlorpyrifos concentration showed highest fluctuation in the survival and the highest delay in metamorphosis. It is apparently shown by decline in the survival from 86.67% to 40.00% and increase in average metamorphosis time from 48.25 days to 62.0 days. Hence, the survival and the development of non-targeted animals were hampered by the Chlorpyrifos.

Key words - Pollution, diversity, tadpole, pesticides, growth, effect, development.

PP-31

A Pioneer Study on diversity of Beetles (Insecta:Coleoptera) around Kukkarahalli lake, Mysuru, Karnataka

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Coleopterans are said to be the group of insects with largest number of species described. Beetles form the most diverse form of insects. They play a major role in food web structure and energy flow in ecosystem. A field survey was carried out by randomly selecting three different study sites around Kukkarahalli lake, Mysuru, Karnataka, India during December, 2019 till February, 2020 on weekly basis. Photographs of the beetles were taken using the Samsung A30 phone with 16 Megapixel for further identification and documentation. Identification was done using standard taxonomic keys. 217 individuals of 26 species belonging to 8 families were identified. Beetles belonging to the family Tenebrionoidea, Chrysomelidae, Coccinellidae, Curculionidae, Scarbaeidae, Plataspidae, Dermestidae and Ptinidae were recorded. Steelblue Ladybird beetles which belong to the family Coccinellida were more dominant. The highest diversity was represented in the family Coccinellida (4%) and followed by Tenebrionoidae (3%), Chrysomelidae (3%), Scarbaeidae (3%) Plataspidae (3%), Curculionidae (2%), Dermestidae(1%) and Ptinidae(1%) . The diversity indices indicate the system is moderately polluted and less diverse with inhumanly distributed community. Simpson index (0.161) and evenness index (0.613) indicates that the beetles are less diverse in the

study area and signifies that the relative abundance of index amongst the species are almost even.
Keywords: Beetles, Kukkarahalli lake, Coleopterans, Mysore

PP-32

Genetic Modification Of Bio-Crops To Enhance Biofuel Production: Increasing The Lignocellulosic Content

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Lignocellulosic biomass wastes is a potent candidate for biofuel and alternative feedstock for second-generation biofuels. Lignocellulose is composed of carbohydrate polymers cellulose, hemicellulose, and lignin. Even though it is the richest source of raw material for the production of bio-ethanol. The problem with it is the presence of a cross-linked polymer, Lignin in its composition, which is extremely hard to digest enzymatically. Lignin is the most rigid constituent providing stiffness to the plant cell wall, owing to which the biomass is difficult to extract in the downstream process. Compositional variability of lignin from plant to plant is also been in the picture. The problem can be solved by exploiting the cell wall polysaccharide biosynthesis pathway for Engineering ideal Bioenergy Crops. Transgenic Overexpression of polysaccharide genes for a high proportion of cellulose, callose, galactan, and mixed-linkage glucans. The complexity of the plant cell wall can be modified to reduce enzymatic deconstruction by accumulating genes for cell wall-degrading enzymes. Factors like hemicellulosic Xyl/Ara ratio cellulose crystallinity (CrI), and uronic acid level, and monolignol proportion is to be modulated for enhancing both the enzymatic saccharification and biomass yield. Gene including GH9, CesA, GT61, GH10, GT43 is crucial for potential genetic cell wall modification during engineering cell walls for genetically modified bio crops in genetic mutants and transgenic plants. Thus this abstract intends to give a molecular insight for the enhanced biofuel production.
Keywords: GH9, CesA, Lignocellulose, Bioenergy Crops, transgenic plants.

PP-33

Evaluation Of Acute Oral Toxicity Of Aqueous Extract Of Edible Mushroom: (*Morchella Esculenta* And *Agaricus Campestris*) In Wistar Rats As Per OECD Guideline 423

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Toxicology is a multidisciplinary science that deals with the study of the harmful actions and adverse effects of drugs and other chemicals constituents found in plants on biological material. The scope of toxicology is very wide, and contains three principal categories: environmental (pollution, residues, industrial hygiene); economic (medicines, food, food additives, pesticides, dyestuffs, chemicals); and forensic (intoxication, diagnosis, therapy). As per OECD guidelines, toxicological studies are very essential in

order to establish the safety and efficiency of a new drug prior to clinical use. The present research had been carried out to study the adverse effects of aqueous extract of two edible mushrooms (*Morchella esculenta* and *Agaricus campestris*), dissolve in distilled water and accordingly to determine the LD50 to establish the safety of aqueous extract of mushrooms in Wistar rats as per OECD guideline 423. Oral administration of the aqueous extract of both the mushroom was given separately to all the rats in a single dosage of 2000mg/kg body weight. All the experimental rats were observed for mortality and clinical signs of toxicity at 24 hr and for the next 14 days. No mortality or any significant changes was observed at 2000mg/kg body weight. This study proved conclusively that LD50 value of aqueous extract of both the mushrooms (*M. esculenta* and *A. campestris*) classified under category 5 as per OECD guideline 423. The results suggest that oral administration of aqueous extract of *Morchella esculenta* and *Agaricus campestris* separately did not produce any toxic effect and found to be safe drug in the tested experimental conditions.

Key words: - Mushroom, Wistar rats, Acute toxicity, OECD guidelines 423

PP-34

Production of Biofuel From Microalgal Species

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As pollution is globally increases and the fossil fuels are exhausted. The biofuel is found to be one of the most attractive and promising step. Surprisingly microalgae were found to be small factories that may yields a lot of substances which carries the properties in acting as a sources of biofuels that are eco-friendly as microalgae contains lipids which are found to be a major factor for the production of biofuels and it may grow quickly as compared to terrestrial crops. Microalgae are found to be important for sustainable renewable energy which will meet the global demand. Currently a lot of advanced technologies were applied in making microalgal biofuels closer in becoming economically feasible by incrementing the cultivation efficiencies, pretreatments, transesterification, harvesting as well as lipid extraction. A rapid increment in carbon dioxide concentration in environment because of several anthropogenic practices may leads to a significant alternation in cycle of carbon globally and were found to be a subject of attention worldwide as well as a matter of current research. In this research scenario Microalgae were found to be attractive path in capturing excess carbon dioxide that are found in atmosphere produced from various sources like automobiles, forest fires, volcanic eruption, decomposition of organic matters and power plants etc. The captured carbon dioxide through microalgae were applicable as carbon source in production of lipids for generating biofuels by successful replacement of petroleum derived fuels without harming the crops and food supply.

Keywords: Biofuels, microalgae, eco-friendly, anthropogenic, transesterification

PP-35

Comparative Effect Of Different Herbal Formulations On Pancreas Of Diabetic Albino Female Rats

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Diabetes mellitus is a most common and dominant disease in the world and it has no total cure. The prevalence of diabetes and its complications are increasing worldwide and have become an important cause of morbidity and mortality. About 25% of the world population is affected by this disease. Synthetic drugs are found out to be quite more costly and produce various adverse side effects even with their strong pharmacological activity. So antidiabetic drugs are in great demand and therapeutic plants that are inexpensive, easily available in surrounding environment and traditionally suitable source of primary healthcare being used for untreated *Diabetes mellitus*. Plants have all times been a common source of medicines and many of the currently available medicines have been derived directly or indirectly from them. Combination of herbals may exploit on multiple aims at the same time to deliver a full relief. Their better affordability and more availability reason raising its demand globally, especially in rural areas and some developing countries, where costly modern medicines are not available. The study was designed to evaluate antidiabetic effect of different herbal formulations of five herbals *viz.* F-1 [*Azadirachta indica, Phyllanthus emblica* and *Tamarindus indica*], F-2 [*Allium sativum, Azadirachta indica* and *Zingiber officinale*] and F-3 [*Allium sativum, Azadirachta indica*, *Phyllanthus emblica, Tamarindus indica* and *Zingiber officinale*] in diabetic albino rats at a dose of 300 mg/kg and comparative histological studies of these formulations along with standard drug (glibenclamide) was done to establish the effectiveness of the herbal formulations. It is identified that F-2 formulation consisting of *Allium sativum* (Garlic), *Azadirachta indica* (Neem), and *Zingiber officinale* (Ginger) was more effective than allopathic medicine (glibenclamide) F-1 and F-3.

Keywords: Antidiabetic, Diabetes mellitus, Herbal formulations, Pancreas.

PP-36

Successful Reintroduction of Captive Chital *(Axis axis)* in Wild Habitat

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Chital is medium sized deer and an important prey base for top carnivores. Present Study area includes Kota Zoo (Captivity) and Mukandra Hills Tiger Reserve (Wild habitat) which was notified as Tiger Reserve in 2013. Chital from captive areas including Kota Zoo were translocated to Mukandra before tiger reintroduction to increase prey base. In spite of significant difference in behaviour of captive and wild Chital, translocated animals were successfully reintroduced and able to survive in natural habitat in Mukandra. Chital was adapted very quickly to natural condition and even extreme conditions in wild. Vigilance behaviour which was rarely observed in captivity in absence of predators is of utmost importance for survival in wild from predation and as observed vigilance behaviour was increased surprisingly after reintroduction, indicated that vigilance is an inborn behaviour in Chital. Chital was also able to survive in reduced physical condition during pinch period in wild. Reintroduced Captive Chital population

spent more time in feeding in wild as compared to already existed wild Chital population. This might be probably because of less adaption of tanslocated Chital population for feeding natural vegetation in wild habitat, specially feeding on fallen leaves during winter season so they spent more time in search of food. Hence captive Chital from various zoos and biological parks of India was successfully reintroduced in the new natural wild habitat of Mukandra.

PP-37

Association of PNPLA3 rs 738409 C/G Gene Polymorphism with NAFLD in Kashmiri population

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Background: The Main Aim is to investigate the role of single-nucleotide polymorphism (SNP) rs738409 in the patatin-like phospholipase 3 gene (PNPLA3) which is strongly associated with increased liver fat content. We investigated whether this SNP is associated with the occurrence and progression of nonalcoholic fatty liver disease (NAFLD) in the Kashmiri population.
Methods: Genomic DNA was isolated and SNP genotyping was performed by using polymerase chain reaction with specific primers followed by restriction fragment length polymorphism analysis.
Results: PNPLA3 rs738409 [G] allele was a risk factor for NAFLD (GG vs CC, OR=2.55, 95% CI 1.80–3.60; GC vs CC, OR=1.88, 95% CI 1.58–2.24). PNPLA3 gene variant was significantly associated with the increased serum alanine aminotransferase (ALT) levels (GG vs CC, standardized mean difference =0.47, 95% CI 0.14–0.81).
Conclusion: PNPLA3 rs738409 polymorphism is not only a risk factor significantly associated with the susceptibility of NAFLD, We found that in the Kashmiri population, individuals harboring the G-allele of rs738409 were susceptible to NAFLD, and that rs738409 was associated with plasma levels of ALT, AST, and the histological fibrosis stage. Our study suggests that PNPLA3 may be involved in the progression of fibrosis in NAFLD
Keywords:, Genetics, Non-alcoholic fatty liver disease(NAFLD, Obesity, Liver enzymes patatin-like phospholipase domain containing 3 polymorphism(PNPLA3), susceptibility. ALT = alanine aminotransferase,AST=Aspartate Aminotransferase.

PP-38

Mechanism of Colloidal Gold Nanoparticles Treated Red Ginseng

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Nanotechnology is gaining attention in the field of agriculture for the improvement of crop yield, quality, disease resistivity and their nutrient utilization. For example Gold nanoparticles is used to increase the germination rate, yield of seed, and anti-oxidant potential. Their toxicity potential is matter of concern. To confirm the toxic effect of red Ginseng when come in contact with colloidal Au-NPs while cultivation; intestinal mechanism of rats is preferred. The repeated oral administration of G red Ginseng by rat for about 14-15 days can be considered. On account of which, its body weight,

biochemical serum, and other histopathological values defines the toxicoty potential. For study of intestinal mechanism human intestinal follicle associated epithelium (FAE) is most suitable model. There is no significant changes in terms of its body weight, food or water consumption rate, coagulation time, biochemistry of serum etc. And also many studies concluded that there is no any accumulation of Au-NPs in rat's body parts like kidney, lungs, liver etc. but there is 100% chance for increament in the level of saponin. Increased level of saponin makes ginseng functional in terms of lowering cholesterol level, anti-inflammatry effects, energy booster, cancer treatment etc. Au-NPs have a great effect in germination of lettuce and cucumber also. Many studies also suggest that the colloidal Au-NPs have stability of more than 60 days. The colloidal Au-NPs can be applied as fertilizers in ginseng cultivation. The Au-NPs have great potential in terms of improvement of quality of food crops in future. And requires more research for the determination of toxicity potential for long term exposure.

Keywords: Ginseng, nanotechnology, G red Ginseng, colloidal Au-NPs

PP-39

To Study Hematological Indices and Peripheral Smear Examination In Microcytic Hypochromic Anemia

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Objectives: To study hematological indices and peripheral smear examination in microcytic hypochromic anemia and to detect hemoglobinopathies by doing hemoglobin electrophoresis in microcytic hypochromic anemia.

Background data: Microcytic hypochromic anemia is common problem in central India. These are single gene, autosomal, recessive monogenic disorders that include thalassaemia and sickle cell anemia. Hemoglobinopathies presents as microcytic hypochromic anaemia, they are misdiagnosed and treated as iron deficiency anaemia. In hemoglobinopathies iron is not required by the body. This causes burden to the patient economically as well as on health. The excess iron which is not required by body has a toxic effect on the body. By doing electrophoresis in microcytic hypochromic anemia, we can categorize anaemia into different groups. Electrophoresis helps in giving correct diagnosis.

Methods:- Subjects for study obtained from the clinical cases suspected of anemia were 100 in total. All patients who presented with pallor and were detected to have microcytic hypochromic anemia on peripheral examination were included in the study. Anemic patients having cause other than microcytic hypochromic anemia and confirmed cases of Iron deficiency anemia were excluded. Investigations were done to confirm that Anemia is microcytic hypochromic anemia and to find out hemoglobinopathies as a cause MHA. Complete hemogram was performed and Hb electrophoresis was done after studying the iron profile and ruling out iron deficiency anemia by performing serum Iron level.

Results: use of electrophoresis showed out of 100 microcytic hypochromic anemia.

Conclusion:- Most common cause of MHA was iron deficiency anemia and 2nd being thalassemia. Differential diagnosis based on complete hemogram and peripheral smear is

possible but special tests like serum iron profile and hemoglobin electrophoresis are a must for confirmation of diagnosis

Keywords: Microcytic Hypochromic Anemia,, Hb, RDW, MCV, TIBC, peripheral smear, hematological indices, Haemoglobin electrophoresis,

PP-40

Role Of Microorganisms in The Hologenome Theory Of Evolution

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Hologenome theory of evolution is the one that considers the holobiont i.e all plants and animals associated with all of its Microorganisms together as a selection unit in evolution.The sum of genetic information of the host and its microbiota can be called as hologenome. This theory of evolution is mainly based on four generalizations: (1) Symbiotic relationship of all plants and animals with microorganisms. (2) Transmission of symbiotic microorganisms between generations. (3) Within the environment the association of the host and the symbionts affects the fitness of the holobiont. (4) Any changes in either the host or microbiota genomes can bring about variation in hologenome under environmental stress. These generalizations when taken together suggests that diverse microbial symbionts can play a major role in adaptation and evolution of higher organisms through their genetic wealth. The diverse microbial symbiont community can thereby aid the holobiont in surviving, multiplying and buying the suitable time necessary for the host genome to evolve during the periods of rapid changes in the environment. The hologenome theory of evolution has a distinguishing feature that considers all of the diverse microbiota associated with the plant or the animal as a part of the evolving holobiont. Thus microorganisms due to their great biodiversity aids in evolution of the holobiont. This abstract highlights the various aspects of hologenomic theory of evolution through microorganisms in the area of microbiology .

Keywords- Hologenome theory, Holobiont , Evolution , Microbial symbiosis

PP-41

Protection Of Environment Using Technology

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Relation between human and nature is very well defined. Nature provides many things which are necessary for human life. Environment includes many natural resources, air, water, soil etc. using all these natural resources human life progressed all over world. But other side it's our moral duty to save environment. Now a day there is too much use of all the natural things that generates many problems. Water pollution, soil pollution, noise pollution, global warming etc. are increasing day by day. All developed and developing countries are responsible for these problems. Now it's our duty to control it. Many government organizations, non-government organizations, international institutes are working in this area. In industries new and advanced technology should be used so that production of waste would be reduced. Using new technology in industry soil and noise pollution will be reduced. Emission of hazardous gases can be reduced by advanced

technology. Deforestation should be stopped and new paperless technology should be compulsory in all department and institutes. E-newspaper, E-magazines, E-books etc. should be promoted in all nations. Plantation should be increased by personal as well as government projects. Use of car, refrigerator, air conditioner, smart phones can be used in organized way to reduce global warming problems. Research institutes and scientists are regularly trying to find out alternate sources of natural resources to protect environment. Regular world level summit and meetings are organized but now it's time to implement all the project and plans seriously to reduce all type pollution. Not only government but also personal efforts with advanced technology should be done to save environment.
Keywords: - Soil pollution, Global warming, E-newspaper

PP-42

Environment Friendly Mitigation Of Heavy Metals From Vegetables Using Low-Cost Agents

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Environment pollution caused by heavy metals has been notified as a global concern since the beginning of industrialization and urbanization. Contamination due to heavy metal instigates serious hazards to plants, humans and to the environment because of its toxic nature. Vegetables comprise the essential and nutritious part of human diet as it contains a- lot of minerals and vitamins. Intake of these heavy metals through food leads to many health issues because of their bio-accumulation and non-biodegradable nature. Vegetables get contaminated through waste water and sewage water used for irrigation, industrial effluents, use of chemical fertilizers and pesticides etc. Arsenic, Cadmium and Lead are most pervasive metals which can create harmful effects even at very low concentrations. There-fore it is necessary to treat vegetables and remove these metals before consuming. Conventional remediation methods are not economical and may not be eco-friendly and also generates large amount of waste. There are several washing agents like sodium carbonate, citric acid, lemon extract, ginger solution etc. which can be used to remove surface contamination from vegetables. This article summarizes best suitable mitigation strategies for heavy metals (As, Cd and Pb) from vegetables through different washing treatments. **Keywords-** Heavy metals, Contamination, Vegetables, Arsenic, Cadmium and Lead

PP-43

Metabolic characterization of indigenous medicinal plant *Leucas biflora* by GC-MS analysis

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Exploration of biodiversity for the identification of biologically active molecules that might have therapeutic potential is a continuous ongoing process of drug development and research. Indian traditional therapies have been used as a part of our lifestyle for ages. Historical text, traditional knowledge, ethnobotany or ethno pharmacological studies are

proving to be a powerful tool for searching lead molecules for the development of new drugs. Plants of genus *Leucas* (Lamiaceae) have been used as ethno-medicinal plant to cure many diseases. *Leucas biflora* is very rare among the genus *Leucas*. Our objective of this experiment was to identify and characterize the metabolites present in the crude methanolic extract of indigenous medicinal plant *Leucas biflora* and check its anti-bacterial effects. Air-dried whole plant was extracted using methanol and the extract was subjected to Gas chromatography-Mass spectrometry (GC-MS). The extract was further used in the Disc-diffusion assay to determine the anti-bacterial effects. The GC-MS result revealed nine different types of high and low molecular weight chemical entities with varying quantities present in the extract. These entities are considered to be biologically active and among the nine biologically active compounds, three of them have been reported to have pharmacological roles. The results of Disc-diffusion assay revealed that the *Leucas biflora* extract is possessing anti-bacterial effects and is noted to be more effective against gram-negative bacterial strain of *E.coli* than gram positive bacterial strain of *B. subtilis*. The results obtained from this study gave a detailed insight about the phytochemical profile which could be further exploited while developing plant based drugs in future.

PP-44

Histopathological Changes Due To The Treatment With Different Herbal Formulations In Carbon Tetrachloride Induced Hepatotoxicity In Wistar Rats

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The liver is a vital organ having a wide range of functions including detoxification, protein synthesis and production of biochemical compounds necessary for digestion. It is involved with almost all the biochemical pathways environmental toxins, drugs and alcohol which can eventually lead to various liver disorders, generally presenting as a distinct patterns of diseases such as hepatocellular, cholestatic (obstructive), or mixed type of liver disorders. Almost all types of liver injuries may lead to hepatic failure and ultimately death. Thus liver diseases are one of the most fatal diseases in the world today. Till date available modern drugs have not been able to come up with a satisfactory answer for liver disorders because of high cost and additional adverse effects. It is therefore necessary to search for alternative drugs for the treatment of liver diseases to replace the currently used drugs of doubtful efficacy and safety.

Present study is designed to overcome hepatotoxicity through herbal formulation as they are reported to possess least side effect. For which we have used three formulations [F1 (*Curcuma longa + Solanum nigrum + Alium sativum*), F2 (*Curcuma longa + Ocimum tenuiflorum + Phyllanthus embilica*) and F3 (*Curcuma longa + Solanum nigrum + Alium sativum + Ocimum tenuiflorum + Phyllanthus embilica*] all the above mentioned herbs possesses antioxidant, hepatoprotective, cardiovascular and antidiabetic, anticancer, anti-inflammatory, antimicrobial, photoprotective and wound healing activities also. In our study when these formulations were given to the hepatotoxicity induced rats, they overcomes hepatotoxicity induced by carbontetra chloride. The histopathological results are as par to standard drug sylimarin and possess less side effects. Hence we can say that

herbal preparations are better healers. As in our study after the use of formulations the recoupment in the histological structure of liver was observed .

Keywords: Carbon tetrachloride, Hepatotoxicity, Histopatology, Herbal formulation and Liver etc.

PP-45

Environmental Influences On The Biofouling Biomass In Open Sea Cage Culture Site

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This study was conducted to assess the biomass of biofoulers in cage farming site and the reference site using experimental net panels, at marine cage farm, off Karwar, Karnataka. Biomass of macrofoulers at three depths in mariculture site were studied and the biomass assessed were compared with that of the reference site, with special reference to the environmental parameters existing in these waters. The qualitative and quantitative measures of biofoulers taken every month from the experimental net panels from December 2014 to November 2015 for three depths i.e. 1meter, 3meter and 6meter in the cage site and from reference site. The environmental parameters, Temperature, Salinity, Dissolved Oxygen pH Ammonia Nitrite and Phosphate were recorded fortnightly from both the sites. The statistical multivariate analysis were carried out to compare the biomass of biofoulers between the two sites and between the depths. The biomass of the communities showed significant difference between the depths of two sites. Biomass was higher in the cage site, when compared to the reference site. Heavy fouling of green mussels was observed in cage culture site, where higher level of nutrients were available in the form of fish-feed. The results of the study will help in designing new integrated farming technologies and to also will help in revising net maintenance protocols, thereby increasing the feasibility of open sea cage farming operations.

PP-46

Envolving Herbal Formulations in Management of Filariasis Fever :- Systemic Review

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Background :- Filariasis is endemic in more than 80 countries and it is assessed that about 1 bilion people are in danger occur globally. Filariasis is deemed to be a major health problem in tropical and subtropical countries. Filariasis is one type of parasitic disease which caused by an infection with roundworms of the Filarioidea. Filariasis are spread by blood-feeding black flies and mosquitoes. It's belong to the group of disease called helminthiasis. Filariasis does not causes very dangerous disease if properly treatment in this disease and alternative herbal therapeutic options. Herbal plants have been used extensively to treat a variety of vector ailments such as malaria. Now days, the

medicinal plants are very popular than synthetic drugs due to their easy availability and fewer side effects.

Aim :- The article aims to the review is to make available up-to-date methodologies intended for the treatment of filariasis.

Method :- An up to date (till December 2020) search was done in Goggle scholar, PubMed, with many keywords to select all the helpful and informative evidence to be reviewed in this article. The search yields 32 articles. After exclusion, a total of 11 articles were finally selected to perform the study.

Result:- Many herbal plants containing pentacyclic triterpene and oleanolic acid have antifilarial activity. Several anti-filarial agents have been also discovered through research on herbal plants used by local healers. The herbal plants which are found to be efficient in this regard are Bael, alhus nepalenis, green chiretta, shatavari, neem tree, sacred tree, deodar cedar, cluster fig, lantana, drumstick tree etc.

Conclusion :- Therefore it can be concluded that the above review of literature demonstrates the importance of remedial agents especially plant derived test substances in treatment of filariasis disease condition.

Keywords :- Filariasis, Filarioidea, Helminthiasis, Neem, Cluster fig

PP-47

Phyto-Pharmacological Review Of *Urtica Dioica* (Stinging Nettle) :- A Modern View Of An Ancient Healing Plant

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Background: Medicinal plants are playing a crucial role in the development of traditional medical system all over the world. Even today, the World Health Organization (WHO) estimates that up to 80% of people still rely primarily on traditional remedies such as herbs for their medicines. Afterwards, plants also began to use as medicine sources for its wide compatibility with most humans. And thus, the 'Ayurveda' came in the picture. It is the Indian traditional system of medicine formation from the plants. In this Ayurveda, *Urtica dioica* a well-known herbal plant of family Urticaceae. It is a warmer region plant and oppositely arranged pairs of leaves which contains sting.

Aim : The ultimate goal of this article is to exhibit the phytochemical & pharmacological activities of *Urtica dioica*, according to several literature surveys.

Methods: Till date (December, 2020), several keywords are used to obtain most possible information from PubMed, Wikipedia, Science Direct Database, Springerlink, Researchgate and Google Scholar; which are utilised in this paper. After exclusion from a total of 90 articles, 32 were nominated to carry out the study.

Result: As a result stinging nettle is a traditional herbal remedy in treatment of variety of diseases as rheumatism gouts, nephritis, haematuria, jaundice, menorrhagia, anemia, eczema, arthritis. The plant revealed contains various chemical compounds like phytosterols, saponins, flavonoids, phenolic acids, tannins, proteins and amino-acids that showed beneficial potential for the natural drugs and medicine. The plant has been reported to have various pharmacological activities as analgesic, anti-inflammatory, anti-ulcer, anti-viral, antioxidant, hepatoprotective, anti-diabetic, anti-colitis and anti-cancer effect.

Conclusion: As an inference we can say that, *Urtica dioica* a good natural source of several efficient alkaloids with immense pharmacological uses. It has much more medicinal value which needs to be explored extensively.

Keywords :- *Urtica dioica* , Phytochemicals, Nutrients, Pharmacological actions

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Applications of Plants Leaf Biosorbents for Removal of Heavy Metals from Contaminated Water

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Human and industrial activities produce and discharge wastes containing heavy metals into the water resources making them polluted and threatening human health and ecosystem. Conventional methods for the removal of heavy metals such as chemical precipitation and membrane filtration are more expensive when treating large amounts of water, inefficient at low concentrations of metal and generate large quantities of sludge and other toxic products that require careful disposal. Bio-sorption is eco-friendly and alternatives methods for treatment of waste water. These methods have advantages over conventional methods because it has a lower cost, easily available and reused. Every bio-sorbent had different physical, chemical, biological properties for heavy metals removal by bio-sorption from water. The heavy metals sorption capacity of biosorbent was significantly increased by the modification of biosorbent materials. It was proved that the developed sorbent can be used as a highly effective material to remove heavy metals from the aqueous solutions, both synthetic solutions and real wastewater. These processes can be made economical by regenerating and reusing the bio-sorbent after removing the heavy metal. Biosorption is influenced by the various process parameters such as pH, temperature, initial concentration of the heavy metal ions, biosorbent dosage and speed of agitation. The various bioreactors can be used in biosorption for removal of metal ions from large volumes of water or effluents. The biomass dosage increment resulted in an increase in removal efficiency, which can be representing to the availability of more surface areas of the biosorbent. This study help in initially screening various bio-sorbent media for setting up treatment plants may at community level or household levels in developed and underdeveloped countries.

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Phytochemical Investigation of *Caesalpinia crista Linn.* Plant and their Medicinal Applications -A Review

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Herbal based drugs have a wide range of applications in prevention and treatment of various disease and health problems during ancient times. *Caesalpinia crista Linn.* is one of the most important herb plants in India, Sri Lanka, Myanmar, West Indies and Indonesia. It contains several phytochemical constituents such as alkaloids, tannins,

coumarin glycosides, essential oils, flavonoids, etc. therefore it shows wide range pharmacological activities. The plant has been recommended for the treatment of various diseases and disorders such as abdominal pain, antispasmodic, anti-amyloidogenic, antibacterial, antipyretic, anthelmintic, anti-ulcer, malarial fever, diabetes, cystic fibrosis, amenorrhoea, leucorrhea, rheumatoid, arthritis, piles and antioxidant. This herb is used internally as well externally to treat the diseases. The present review highlights the literature on phytochemical constituents and medicinal applications of *Caesalpinia crista* plant parts. This review also searches for new medicinal values and produces one of the databases.

Key words: Tannins, Antioxidant, *Caesalpinia crista* flavonoids, herb, medicinal value.

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Influence of Prominent Immunomodulatory Cytokinestnf-A308 G>A (Rs1800629) and Tgfβ1 G>C (Rs1800471) Sequence Variations As An Important Contributing Factor InEtiopathogenesis of Recurrent Miscarriages (RM) In Kashmiri Women (North India)

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Background: Different **c**ytokines have been substantiated to play an important role in recurrent pregnancy losses (RPL) and we aimed to evaluate the genetic variation of *TNF-α* 308 G>A (rs1800629) and *TGFβ1* G>C (rs1800471) to confer risk in patients with recurrent miscarriages (RM) in highly consanguineous population of Kashmir (North India).

Methods and Preliminary results: A total of 200 women who experienced 2 or more recurrent miscarriages (along with 100 spouses,60 products of conception and 240 healthy controls) with 2 or more full term pregnancies were recruited from the same geographical region and evaluated by polymerase chain reaction-restriction fragment length polymorphism method .*TNF-α* 308 G>A variant genotype (AA) was significantly associated with recurrent miscarriage cases (2.5% vs. 0.4% controls respectively: $p<0.05$) and it's per copy allele A also presented more in cases (32% vs. 24% in controls; $p<0.05$) that showed a risk of 1.5 fold for cases ($p<0.05$). The difference of variant genotype GA was observed to be significant among recurrent miscarriage cases and Product of Conception: 60.5% vs. 83% respectively ($p<0.05$) wherein variant *TNF-α*GA genotype conferred 3-fold risk ($p<0.05$).On the other hand, *TGF β1* G>C showed no association with recurrent miscarriage cases in our population.

Preliminary Conclusion: The study found both *TNF-α*308 G>A variants are significantly associated with an increased susceptibility for recurrent miscarriages to cause pregnancy losses but on the other hand *TGF β1* does not seem to impact the outcome of pregnancy in our population.

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Histopathological Changes On Adrenal Gland Of Albino Rat Due To Ethonolic Effect Of Tridax Procumbens Weed

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Exposure of toxicants manifests variety of pathological lesions in various organs depending upon its dose and the period of treatment. Weeds have remarkable capacity to germinate under varied conditions. *Tridax procumbens* is also one of the known weed of India, posses many ethanobotanical & medicinal value. Adrenal glands are essential for our everyday health. They produce hormones that help our body to regulate sugar, B.P etc. An ethanolic extract of the *Tridax procumbens* was administered orally for 7, 14 & 21 days chronically at doses of 300 and 600mg/kg.bwt of Sprague dawley rats. The highest dose level tested caused a significant increase of wet weight of adrenal gland along with some histopathological changes in cortex & medullary region of adrenal. The aim of this study was to demonstrate the structural changes in the adrenal cortex that involve disarrangement of cells and modification in thickness of the different layers of the adrenal gland. The adrenal medulla in the rat has been considered to have little proliferative activity.

Keywords: *Tridax procumbens*, Sprague dawley rat, Adrenal cortex, wet- weight.

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Effect of Nutritional source on growth of *Diplocarpon rosae* causing Black spot of Rose (*Rosa indica* L.)

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Each microorganism requires proper nutritional source for their growth. The present investigation deals with the effect of three phosphate sources on the growth of *Diplocarpon rosae* causing Black spot of Rose (Rosa *indica* L.) belongs to family Rosaceae. Roses and their beautiful blooms captivate gardeners and flower lovers everywhere. The nutritional source (phosphate sources) like ammonium dihydrogen orthophosphate, potassium dihydrogen orthophosphate and sodium dihydrogen orthophosphate were used against the pathogen. In the result it was found that 0.1% concentration of ammonium dihydrogen orthophosphate and sodium dihydrogen orthophosphate reduced the growth while potassium dihydrogen orthophosphate stimulated the growth of *Diplocarpon rosae.*

Key-words: Phosphate sources, *Diplocarpon rosae*, Nutrition, Black spot Rose,

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Future prospect of biomass and bio-energy: A Review

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Biomass is a promising raw material for energy production, heat transfer technology which includes bagasse, rice husks, grass, cotton stalks, coconut shells, soy husks, oil-soaked cakes, coffee grounds, jute waste, peanut shells, peanut shells etc. About 32% of

the country's total energy consumption is still derived from biomass and more than 70% of the country's population depends on it for its energy needs. The modernization of biomass energy use has taken place in the past in just three ways namely (1) technology improvement in traditional biomass applications such as for cooking and rural industries, (2) development of process for conversion of raw biomass to superior fuels (such as liquid fuels, gas and briquettes), and (3) biomass penetration based electricity generation technologies. These developments have opened up new biomass energy systems in India to address energy security and environmental concerns. Modern technology provides opportunities to convert biomass into fossil fuels (such as ethanol and methanol) and electricity. The Ministry has been implementing the biomass power / co-generation program since the mid-1990s. More than 500 biomass projects and bagasse cogeneration include 9806 MW installed in the country to generate electricity. Leading states for biomass energy projects are Chhattisgarh, Madhya Pradesh, Gujarat, Rajasthan and Tamil Nadu. According to 31.10.2019, a total capacity of 10145 MW has been incorporated into the Biomass Power and Cogeneration Sector, installed Biomass Power - 1826 MW, installed Capacity of Bagasse Cogeneration - 7547 MW. The advantages of setting up biogas power plants are that they can save annual energy costs, reduce CO_2 emission, bio fertilizer production, direct and indirect employment for people. If progress is made at this rate, biomass will provide enough bio-energy in the future in India.

Keywords: Bagasse, Biomass, Cogeneration, Fuels.

PP-54

Mycorrhizal Association in Quinoa (*Chenopodium Quinoa* Willd.) Increase Phosphate Uptake Under Water Stress Condition

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Background:

The influence of soil moisture on the infection, hyphal development and uptake of **P** of a VA mycorrhizal fungus *Glomus fasciculatum* in Quinoa was studied at four different moisture levels (-0.2; -0.6; -1.2 and -2.4 MPa).

Methods and Preliminary results: The experiment is carried out in soil which was a phosphorus deficient black sandy loam soil (pH 7.2) containing 4 mg/kg. NaHCo3 soluble P (Olsen et al., 1954). Earthen pots with 5 kg of soil were sterilized for one hour and stored at room temperature for one week. *Glomus fasciculatum* (Thaxter sensu Gerd.) Gerd. and Trappe) maintained in pot culture which was used as inoculum. 50 ml of inoculum and infected roots (85%) was uniformly distributed below 2 cm in all pots. For control treatment the sieved soil suspension was added to maintain the rhizosphere of soil. 3 Quinoa plants were grown per pot. The spore content was increased only 10% in lowest moisture levels. These results suggest that at the altered soil moisture levels the degree of infection and extra radical mycelium are altered to meet the water requirement of the plant.

Preliminary conclusion: There was an increase in the amount of N in roots than shoots with respect to control plants. Ponder (1983) found that VAM by passing the dry zones and P depletion zones through the extended root system by external fungal Hypae in black walnut. Similarly here also there was an increase in the intensity of VAM colonization spore number and Hyphal density in high water stress condition (-2.4MPa).

And the high soil moisture level was not favourable for fungal colonization because of water logging and oxygen deficiency.

PP-55

Heeded And Unheeded Attentions About COVID-19 Viral Transmission With Special Reference To Biomedical Wastes

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The whole world is struggling with the problem of COVID-19 disaster which not only affected the human being but also collapsed the global economic condition and therefore, the survival of human beings. COVID-19 transmission in the society through various means like asymptomatic cases, fomites, coughing and sneezing, and biomedical waste is a matter of concern. It increased the usage of masks and gloves by the public as preventive measures. This is associated with the huge amount of biomedical waste, generation which is coming out with household waste. Biomedical waste generated from healthcare centre, quarantine and isolation centres; laboratory diagnosis facilities have received international attention for disposal. However, household wastes mixed with biomedical wastes have not received proper attention. The aim of this review is to draw the attention of different stakeholders towards this problem to get coordinated support to get rid of these wastes. As the detailed information is not available on the transmission of COVID-19 through discarded gloves and masks, it is necessary to develop awareness, modify waste transportation vehicles by introducing a covered section, produce gloves and masks from eco-friendly material, uniform implementation of rules in all states of India to control fomite and biomedical waste-based transmission. As the clock is ticking, the right decision for strict implementation of policies and their monitoring must be taken to control the spread of COVID-19.

Keywords: COVID-19, Gloves, Masks, PPE kit, environmental impact, incinerators, hospital waste.

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Application Of Activated Carbon In Wastewater Treatment: A Review

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Activated carbon, more popularly known as activated charcoal is a form of carbon that is processed either chemically or physically to form small low volume pores to increase the total surface area. Increase in total surface area plays a key role to improve the adsorption capacity of the carbon. One-gram activated carbon contains approximately 3000m^2 of total surface area as determined by gas adsorption which is the main cause of its high microporosity. The method of activation involves both physical and chemical treatment. The physical method involves carbonisation and oxidation, whereas chemical method involves impregnation of the carbon with certain chemicals. In both cases, the primary objective is to enhance the efficiency of the provided carbon material. Activated carbon is broadly classified according to their particle size, porosity, and source. Mostly used

source is biological waste such as rice husk, sugarcane bagasse etc. The level of activation primarily depends on the extent of surface area created by the physical or chemical treatment method. Activated carbon is usually obtained form charcoal, yet when it is derived from coal it is referred to as activated coal. Charcoal has been an age-old material which has multiple uses. However, activated charcoal is primarily used in wastewater treatments. Activated carbon has good capacity to remove dyes, fluoride, and heavy metals from industrial sewage. On the other hand, activated carbon is widely used in personal care products like soap, face wash, teeth whiteners etc.

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COVID-19 Infection: An Overview Of Origin, Transmission, Replication, Pathogenesis And Immunology Of Coronavirus

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A novel coronavirus, designated as the novel COVID-19, emerged in Wuhan, China, at the end of 2019. As of January 2020, at least 800 cases had been diagnosed in nine countries: China, Thailand, Japan, South Korea, Singapore, Vietnam, Taiwan, Nepal, and the United States. 26 fatalities occurred, mainly in patients who had serious underlying illness. Although many details of the emergence of this virus — such as its origin and its ability to spread among humans which remains unknown, an increasing number of cases appear to have resulted from human-to-human transmission. Given the severe acute respiratory syndrome coronavirus (SARS- CoV) outbreak in 2002 and the Middle East respiratory syndrome coronavirus (MERS-CoV) outbreak in 2012, 2019-nCoV is the third coronavirus to emerge in the human population in the past two decades — an emergence that has put global public health institutions on high alert.

Keywords- Coronavirus, fatalities, transmission and respiratory syndrome.

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Physico-Chemical Analysis Of Khazana Bawali District Beed (M.S.) India

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Khazana Bawali Is One Of The Artificial Water Body Of Beed Is Used For Irrigation As Well As By The Villagers. Present Paper Deals With The Physico-Chemical Analysis Of Khazana Well Beed Maharashtra For Its Water Quality From July To December-2016. The Physico-Chemical Parameters Studied Included Atmospheric Temperature, Water Temperature, Transparency, Ph, Do, Cl, Bod, Sulphates, Ts, And Tds Was Determined. The Water From Khazana Well Also Suitable For Agricultural Potential And Other Purposes. Collected Water Samples Should Be Analyzed & Compared With Standard Values Recommended By Bis. Monthly Analysis Over The Period Of One Year Suggests That The Water From Khazana Bawali Is Not Badly Polluted.

Keywords: Physicochemical, Khazana Well, Water Quality.

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To Study The Mode of Attachment of Monogenean Fish Parasite of The Genus *Bychowskyella* Archmerow, 1952 In The Fishes Of River Gomti.

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The aim of this study was to investigate the mode of attachment of the genus *Bychowskyella* Archmerow, 1952 on the gills of fish host. The host is collected from river Gomti from lucknow India. It was found that parasite attach itself on the gill at the distal end. And attaches itself in between two gill lamellae by its special rhomboidal haptor. An effort has been also done to study that their attachment also causes mechanical injuries to the fish .

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In Vitro* Bio-Accessibility Of Selenium Supplementation On Antioxidative Activity Of *Volvariella Volvacea

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Selenium is one of the essential mineral nutrients, required by human body as involved in antioxidant and defense reactions. In this context, the present study focused on evaluation of the effect of Se supplementation on two strains of *V. volvacea* (VV3 and VV6), under *in vitro*. *In vitro* studies revealed that Selenium (Se) supplementation of 10 and 15ppm maximally enhanced the radial growth rate of VV3 and VV6 respectively, among all the treatments including control. Mycelial proliferation in liquid medium was recorded highest in case of 15 (12.09±0.42 g/l) and 10 ppm (12.30±0.60 g/l) in case of VV3 and VV6. Scanning Electron Microscopic observations for the effect of Se on hyphal growth disclosed sparse, non-uniform damaged hyphae with increasing concentration of Se at 20 ppm, compared to regular, dense healthy hyphae in control in both the strains. The positive influence of Se biofortification was also observed on antioxidative activity of *V. volvacea* under *in vitro* in terms of protein content, total phenols, flavonoids, Peroxidase (PO) and free radical scavenging activity. The antioxidants were found to increase with the increase in Se supplementation, however when the concentration exceeded 15ppm, the levels were reduced due to toxic effects of Se under axenic conditions. Biosorption studies for Se using ICPMS
revealed highest Se in 20pmm supplementation i.e., 576.01±12.98 µg/gdw and 623.27±10.74 µg/gdw in VV3 and VV6. The functional group diversity analysis using Fourier Transform Infra-red Spectroscopy (FT-IR) confirmed changes in structural and conformational changes in biomolecules in Se enriched mycelia. The present study concluded that Selenium improved the antioxidative property of *V. volvacea* compared to control.

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Plant-Mediated Synthesis Of Nanoparticles, A Facile And Environment Friendly Approach

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The global human population are increasing with time, the adequate supply of resources has come to be limited. The development of unpolluted technologies for environmental welfare and supplies of energy source for the sustainable development of human being is necessary. Nanotechnology has developed a significant wave on emerging 'cleaner' and 'greener' technologies with substantial health and environmental revenues. Green nanotechnology is the branch of biotechnology which predicts sustainability over numerous applications. The nanotechnology applications become more useful to solve environmental issues through reducing the global energy consumption for the duration of the synthesis and manufacturing course, the capability to recycle products after practise as well as to develop and use eco-friendly materials, it is the most proficient technique to decrease and eliminate the discharge of toxic pollutants in water, soil and air environments. The nano-manufacturing green synthesis of nanomaterials and the treatment of wastewater with allusion to the principles of green chemistry have been technologically advanced. Currently, nanotechnology shows great promise to resolve the sustainability issues however it is difficult to manage the adverse effects of nanomaterials on the environment and human health. In spite of low cost and high performance of nano-remediation technology, more advanced research is required to understand as well as stop the probable adverse environmental effect i.e. ecosystem-wide effects which are conceivable by green nanotechnology. The study presents the green chemistry principles influencing the life cycle of nano-products from design to disposal and towards environmental welfare.

Keywords: Plant-mediated synthesis, sustainable development, nano-remediation, Nanomaterials.

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Targeting Plant Pathogens Using Carbon Nanotubes

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Studies done in field of nanobiotechnology in the past decade have made immeasurable impacts and revolutionized the face of research outcomes of the whole scientific community. Nanoparticles being employed in accessing its impact on biological systems have proven to be significant tools for a variety of experiments conducted. One such form, carbon nanotubes (CNTs) have been in focus lately, experiments related to its effects on variety of biological samples have been conducted and still continue to take place.

In the series of experiments conducted by us, we targeted plant pathogenic bacteria which are potent genetic engineering tools as well, by using Multi-walled Carbon nanotubes (MWCNTs) and Single-walled Carbon nanotubes (SWCNTs). Studies have proven that

carbon nanotubes have anti-microbial properties when used in significant concentrations. Our aim to access this property in lower concentrations proved to be successful. Some of biochemical tests were performed to deduce the actual effects of CNTs on bacterial cells which brings about their death. It is important to note that it is necessary if this treatment be used in-vivo plant systems to provide them resistance against these bacteria, nanotube phytotoxicity is absent. For this, the prerequisite of experiments conducted on seeds proved to be helping, as opposed to the anti-microbial activity of carbon nanotubes it has proven to show positive effect on seeds to promote germination time and growth.
Keywords: Nanoparticles, carbon nanotubes, plant pathogens, anti-microbial, multi-walled/single-walled carbon nanotubes, phytotoxicity.

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Phosphorus solubilizing endophytic bacteria from Indian Himalayas and their role in plant growth promotion

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Endophytes are the hidden companions of the inner plant tissues. These microbes have an ability to undergo various plant growth mechanisms to benefit their host. Looking at the endophytic microbe's benefits, a total of 67 putative endophytic bacteria were isolated using different nutrient growth media from three different maize genotypes grown in the Divine Valley of Baru Sahib, Himachal Pradesh. Out of 67, 10 endophytic bacterial isolates were selected for the further characterization on the basis of plant growth promoting attributes. Phosphorus (P) and potassium (K)-solubilization was observed in about 25% of the bacterial isolates. Additionally, bacterial endophytes ability of undergoing mechanisms like nitrogenase activity, production of indole acetic acids (IAA) and siderophores were also studied. Among 10 selected bacterial strains, the three efficient endophytic plant growth promoting strains EU-A2SK1, EU-M4ARAct and EU-E1RT3-1 were identified as Pseudomonas brenneri, Ewingella americana, and Pantoea agglomerans respectively. The phylogenetic tree was constructed to know the taxonomical affiliations of selected bacterial strains. These three efficient endophytic bacterial strains were tested on the maize seeds. The isolates efficiently increased the shoot length and enhanced anthocyanin, chlorophyll content, physiological available iron, and total protein content as compared to untreated control maize plants at 60 days of maize plant growth. These bacterial strains as single or in the consortium could be useful as bioinoculants/biofertilizers for sustainable agriculture.
Keywords: Biochemical levels, Endophytes, Maize, Pantoea, Plant growth promotion, Sustainable Agriculture

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Association Of Esr1 Intronic Polymorphism With The Risk Of Reccurent Pregnancy Losses In Ethnic Kashmiri Population.

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Result: From 50 medical records, a total of 47 ADRs were recorded among 25 patients out of which 16 were females and rest were males. The common cancers observed were, breast carcinoma, leukemia, lung, colon and ovarian cancer. Highest number of ADRs

were observed with alkylating agents, taxanes, antimetabolites and kinase inhibitors and monoclonal antibodies. The most common affected organ systems due to ADRs were gastrointestinal system (36.17%) and blood and lymphatic system (23.40%). According to WHO-UMC causality assessment scale, majority of the ADRs were of "possible" category. Preventability analysis showed that 85.11% of ADRs were unavoidable reactions, while 14.89% of ADRs were possibly avoidable. Severity analysis of ADRs showed that 87.23% of ADRs were mild and 12.77% were of moderate severity.
Conclusion: Monitoring and reporting of ADRs is essential for efficient management of cancer patients. The majority of the ADRs observed were unavoidable and mild to moderate in severity.

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Deposition Of Heavy Metals In Gomti River: A Report From Lucknow City Area

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Heavy metals are defined as metallic elements that have a relatively high density contrast to water. Heavy metals are reported to play a vital role in maintaining the body metabolism, but if present in over quantity, proven to be detrimental for living organisms. Gomti river, a crucial tributary of river Ganga, it receives huge quantities of untreated sewage, agricultural runoff, street washouts, sediments etc. Fishes are within the direct exposure with water contaminants, therefore are extensively used as laboratory model to assess the effects of heavy within the aquatic system. Present study is designed to investigate, the pattern of metals concentration in water, sediment, and three most edible fish species (*Catla catla, Channa punctatus,* and *Heteropneustes fossilis*) of different trophic levels, captured from Gomti (Lucknow), India was examined. For analysis of metals concentration water and sediment samples were collected from three deferent sites of Gomti river i.e. pakka pull (Harding Bridge), hanuman setu and Gomti barrage. Samples were analysed for chromium (Cr), copper (Cu), cadmium (Cd), lead (Pb), mercury(Hg), and arsenic(As) concentration. Inductively coupled plasma spectrophotometery (ICPMS) was used for estimation of heavy metal concentration and the results were given in mg/l. Results revealed the order of occurrence of heavy metals in tested samples of water and sediments was as As>Cu>Cd>Cr>Pb>Hg and Cd>As>Pb>Cu>Cr>Hg, respectively ($p<0.05$). Further analysis suggested that concentration of heavy metals was higher in sediments sample. The result showed that the liver and gills appeared to the main heavy metal storage tissue. While the muscle of fish was lower accumulation compare than gill and liver. The concentrations of the heavy metals were higher in the tissues than the recommended value. This study suggested that continuous monitoring of heavy metals in water, sediment and edible fishes of Gomti River should be aimed at to protection of ecological status of the river and its adjacent area.

Key words: Heavy metals, Gomti River, bioaccumulation

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Impact Of Heavy Metals On Hematological Profile In Fish From The Bhaghar Lake, India: A Preliminary Study

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Hematological parameters have been recognized as valuable tools for monitoring fish health induced by any changes in the quality of waters and other related environmental factors. In present study, assessment of heavy metals concentration in fresh water Bhaghar Lake (located at Tahsil-Ramnagar, District- Barabanki, State-Uttar Pradesh, India) concerning their effects on hematological parameters in fish Channa punctatus from it were carried out. The water and sediments of the lake were analyzed for zinc (Zn), copper (Cu), and lead (Pb) concentrations. At the same time, blood parameters of the exposed fish were also examined for any hematological modifications. The results revealed that concentrations of the metals differs significantly ($p<0.05$) between the lake water and sediments. The concentration (mg/l) of the metals were in the order of Cu>Zn, whereas Pb was not detected in any sample. Blood parameters such as blood cell count (red and white blood cells), hemoglobin, hematocrit, mean cell hemoglobin concentration, mean cell volume, and mean cell hemoglobin were noted to be altered from their normal value in fish ($p< 0.05$). In conclusion this study indicated that Cu and Zn polluted the lake water and posed their harmful impact on fish health. Further this is the first report on distribution of heavy metals and proximate composition of important edible fish from this fresh water lake in India.

Key words: Bhaghar Lake, Hematological parameters, Channa punctatus heavy metals

PP-67

Adverse Drug Reactions Monitoring Of Anticancer Agents In A Teaching Hospital

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Background: An increase in the cancer incidence has resulted in increased use of chemotherapy which in turn increase patient's susceptibility toward adverse drug reactions (ADRs). The ADRs associated with anticancer agents are under reported and warrant proper reporting and performance of causality assessment. A hospital based retrospective observational study to explore the prevalence and causality of adverse drug reactions of anticancer agents was planned.
Materials and Methods: The study was carried out out at Punjab Institute of Medical Sciences (PIMS), Jalandhar, Punjab after obtaining IEC approval. The data pertaining to ADRs was collected from medical records of the cancer patients visiting PIMS between February 2020 to May 2020. A case report form was used to record patient's data. The collected data was tabulated and analyzed by using descriptive statistics. Causality assessment was done by using WHO causality assessment scale. Preventability and severity of the reported ADRs was also assessed.

Result: From 50 medical records, a total of 47 ADRs were recorded among 25 patients out of which 16 were females and rest were males. The common cancers observed were, breast carcinoma, leukemia, lung, colon and ovarian cancer. Highest number of ADRs were observed with alkylating agents, taxanes, antimetabolites and kinase inhibitors and monoclonal antibodies. The most common affected organ systems due to ADRs were gastrointestinal system (36.17%) and blood and lymphatic system (23.40%). According to WHO-UMC causality assessment scale, majority of the ADRs were of "possible" category. Preventability analysis showed that 85.11% of ADRs were unavoidable reactions, while 14.89% of ADRs were possibly avoidable. Severity analysis of ADRs showed that 87.23% of ADRs were mild and 12.77% were of moderate severity.
Conclusion: Monitoring and reporting of ADRs is essential for efficient management of cancer patients. The majority of the ADRs observed were unavoidable and mild to moderate in severity.

PP-68

A study on the frequency of lip print variation and correlation between fingerprint and blood group.

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The study of the wrinkles and grooves on the lip is known as Cheiloscopy. Lip prints are unique to each individual like fingerprint. Fingerprints and blood groups as a method for investigation/identification have been used since past centuries. The use of lip print patterns as a means for identification tool is an emerging method. This study was carried out in 2020 which included a total of 250 (125 males and 125 females) individuals belonging to different Tribes. The main aim of the study was to determine the most predominant lip print pattern, fingerprint and blood group among the Naga Tribes and also to find if there is any correlation between the fingerprint and blood group. Type I' was found to be the most predominant lip pattern among the Nagas. Blood group O+ve and whorl type of fingerprint was found to be common. The study showed some association between the fingerprint and blood group. Therefore lip prints, fingerprints and blood group can be used as a parameter for identification purpose.
Keywords: lip prints, fingerprints, Blood groups, Identification.

PP-69

Inorganic And Organic Components Of Haemolymph In The Male Millipede *Mordanius Importatus* And Effect Of Hight Temperature On It.

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The millipedes belong to the class Diplopoda of phylum Arthropoda. Millipedes are found in moist and humid environmental conditions and climate change affect the survival of millipedes. Human induced climate change has created new challenges for biodiversity conservation. Scanty rainfall increase in temperature and decrease in moisture can have direct effect on survival of Diplopoda fauna. The millipedes belong to the class Diplopoda of phylum Arthropoda. Present study on the effect of climate change

(high temperature) on the haemolymph inorganic and organic components of millipede *M. importatus*. The millipede *M. importatus* is cosmotropic found abundantly in cotton field of Amravati district in the rainy season (June – October). The observation show that exposure of millipede to high temperature affect the haemolymph inorganic and organic components .

Key words: Millipedes, Mordanius importatus, Haemolymph.

PP-70

An Overview on Impact of Climate Change on Biodiversity and Its Solutions for Conservation

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Biodiversity is the variation of life at all levels of biological organisation. In present time, biodiversity is destructed by various human activities such as settlement, plantation, poaching, and infrastructure development activities. Conserving the biodiversity is a major phenomenon to any country to keep the balance of environment. Human pressures on ecosystems are causing changes and losses at rates not seen historically. People are changing ecosystems more rapidly and more extensively than over any other period in human history. Climate change adds yet another pressure on natural ecosystems. Today, the commonly used term 'climate change' represents any change in climate over time, whether due to natural causes and/or as a result of human activities. Climate change is one of the greatest threats to biodiversity. The impacts of climate change on biodiversity are of major concern to the Convention on Biological Diversity (CBD). Climate change alters entire ecosystems along with all of the plants and animals that live there. It is reducing the ability of indigenous and local communities to sustain traditional, biodiversity-based livelihoods. Climate change is already a reality. Even if all anthropogenic emissions were to stop now, changes would continue into the future. We must, therefore, increase climate change mitigation and adaptation efforts. It is important to conserve biodiversity because of several benefits it offers that are essential to live. Number of measures including enabling policy and legal framework have been put in place to mainstream environment, including biodiversity. This study focused on the biodiversity and climate change. Further, the impacts of climate change on biodiversity and solutions for climate change were also discussed.

PP-71

Applications of Chitinase in Agriculture and Waste Management

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Background: Protection of plants from disease produced by phytopathogenic fungi is one of the most important challenges in agriculture. Therefore, finding biological products that could be used for biological fighting is very important in agriculture. Chitinase is a glycosyl hydrolase that hydrolyses chitin. The use of chitinases as a bio-control agent is one of the attractive and environmentally safe strategy. Chitinous biomass can be converted into useful simpler components by utilizing chitinases minimizing water pollution.

Methods and Preliminary results: In this work, chitinase produced by *Bacillus cereus* GS02 was explored to find its utility in various biotechnological applications. The chitinase was tested for its antifungal activity by way of inhibition of the radial growth of *Fusarium oxysporum* and *Rhizoctonia solani.* The results indicated 45% and 46.6 % fungal inhibition for *Fusarium oxysporum* and *Rhizoctonia solani,* respectively. Further to check its potential in waste management, various chitinous wastes (prawn and shrimp shells) were collected, washed, autoclaved and incubated with chitinase, along with commercially available chitin flakes and powder. Degradation and production of hydrolysed products were compared by using colloidal chitin as a control. After the hydrolysis of chitin wastes by chitinase, HPLC analysis of hydrolysed products was done. It revealed that the products of chitin hydrolysis were eluted at ~3.1 minutes which is similar to that of commercially available N-acetylglucosamine (GlcNAc).
Preliminary conclusion: The present enzyme showed antifungal activity against two phytopathogenic fungi namely *Fusarium oxysporum* and *Rhizoctonia solani.* Therefore, the present enzyme has high potential in agriculture for controlling phytopathogenic fungi. The chitinase was efficient in degradation of chitinous waste, producing low molecular weight industrially important N-acetylglucosamine (yield- 34 mg/ml). The present enzyme has good potential for the management of chitinous wastes by converting them into useful products. These properties may generate interest as its uses in various pharmaceutical and medical fields.

PP-72

Classical Taxonomy: A Protagonist in the Era of Phylogenomics

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Since 1980s, molecular characters called attention to systematics. Heading towards 21st century, the hasty developments in sequencing techniques for robust comprehensive gene sets palyed a prominent role in phylogenetic reconstruction at all taxonomic levels due to unprecedented amounts of potentially informative characters. This has led to an astonishing progress on one hand, while on other side it is jeopardizing the survival of comparative morphology with preoccupation of molecular contributions in systematic and evolutionary biology. Although, molecular systematics claimed to revolutionize taxonomy by increasing species discovery and delimitation without the need for precise taxonomic knowledge, apart of using mtDNA barcoding received criticism on methodological, theoretical, and empirical grounds. The significance and limitations of molecular taxonomy and the vital role of classical taxonomy were reviewed to inventor earthworm diversity and other entities. The study have reinforced the implementation of the integrated approach of classical and modern taxonomy. It is emphasized that in this genomics era comparative morphology shall continue to play a critically important role and significant methodological developments in this discipline is prerequisite. That may leads to a new revolution in biodiversity assessment, conservation biology, evolutionary biology and a lot more.
Keywords: Phylogenetic, Systematics, DNA barcoding, Species, Biodiversity.

PP-73

Agriculture Field Analysis using Data Analytics and Machine Learning

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The field of Agriculture plays a vital role in our India and all over the world. The modern and advanced technologies trying to help our farmer and the economy of our country more effectively so that our country can be grown in a much larger way. Data analytics through Python and many machine learning algorithms are used to work on the dataset for prediction purposes and improve the quality of our land in terms of soil, production, and quality. Many data mining approaches are used for analysis and mining purposes. Recent developments in the Information Technology field help to predict crop production based on the stored information. This information is processed with many data analytics and data mining techniques. This paper is mainly focused on analysing the faring concepts which can help to predict the estimation in terms of efficiency and cost. This can be achieved through a suitable data model which helps to achieve a high prediction rate.
Keywords: Data Analysis, Data Analytics, Data mining, Data Model, prediction, Machine Learning

PP-74

Environmental Effects of Bioremediation

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Another consequence of our quick industrial over the past few hundred years is the increase in pollution and contamination at a lot of economic activity damages the environment in some cases spreading heavy metals and even radioactive material into communities drinking water.
Bioremediation scientists do just that by engineering Microbes to take care of some off humans largest messes.
Keywords - Bioremediation, Heavy Metals, Microbes

PP-75

Different Pest management modules and seasonal incidence of insect pests in the Spring Tomato Ecosystem

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The susceptibility of tomato plants to insects and pathogens can be high, depending upon the pest species, crop stage, growing season and crop location. The investigations on seasonal incidence of insect pests were carried out in three different pest management modules (Organic, IPM and conventional) during three years (2017-2019, January to June) in spring tomato. The data on crop variety, insecticide usage, insect pest incidence and crop yield was recorded weekly. *Aphis gossipii* and *Helicoverpa armigera* were

found infesting the crop. The results revealed that the population of aphid initiated in 9th SW in 2017 and in 11th SW in 2018 and 2019. Population of *H. armigera* initiated in 9th SW in 2017 and 14th SW in 2018 and 2019. Among abiotic factors, temperature, rainfall and humidity showed significant effect on the population of aphids and fruit borer build up. The pesticides used by the conventional farmer's effectively reduced aphid and fruitborer population as against other modules. Organic fields had significantly more generalist insect predators than conventional fields and IPM fields. Pesticide residue analysis revealed the presence of residues of fertilizers (Mancozeb) and pesticides (Quinalphos, triazophos and chlorpyriphos) in soil and fruit samples. The mean tomato fruit yield obtained from one hectare of land, was maximum in the IPM field followed by conventional and organic field. Soil biological properties showed the presence of higher number of earthworms, fungi and actinomycetes in organic field. Pesticidal contamination in the conventional field soils significantly inhibited the activity of dehydrogenases, urease and alkaline phosphatase. The seasonal incidence of insect pests of tomato will be helpful in preparing proper schedule for effective management of this pest.

PP-76

Exposure Of Diethylnitrosamine Toxicity On Mice Uterus

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Diethyl nitrosamine (DEN) is a potent carcinogen produce from the metabolism of some drugs and found in tobacco smoke, processed meat, soybean, cheese, and wide variety of foods. It induces oxidative stress, resulting in cytotoxicity, mutagenicity, and carcinogenicity. It's formation can occur only under certain conditions, including strongly acidic conditions such as that of the human stomach. High temperatures, as in frying, can also enhance the formation of nitrosamines. The present investigation was aimed to determine the effect of DEN on histopathological alteration on uterus. Swiss albino mice divided into two group. Each group have three mice. DEN (100 mg/kg i.p.) was administered in 1st group and 2nd group was taken as control. Histopathological examination reveal that control group have ***w***ell maintained endometrium, myometrium and perimetrium. Prominent endocrine glands were noted in the endometrium whereas Exposure of DEN induced Uterine inflammation and characterized by massive thickening of the endometrium and conspicuous narrowing of lumen. In addition, there was sloughing off of the lining endometrial epithelial cells, damage to endometrial glands. The uterus is an essential reproductive organ of a female body, where the zygote implant and the development of embryo occur. DEN cause infertility in the female because the size of the lumen of uterus decrease due to its adverse effect. DEN cause toxicity in the endometrial cells which result in the damaging of the cells, sometimes these cells may convert into cancerous cell, which may cause endometrial cancer.

Keywords: Diethyl nitrosamine, carcinogen, cytotoxicity, mutagenicity, endometrium, myometrium, perimetrium**.**

PP-77

Therapeutic Potential of *Glycyrrhiza glabra* Against COVID 19

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The world has woken up to an unprecedented era of a deadly pandemic which it was by no means prepared for. Coronavirus disease 2019 is a global pandemic which hit the humans in every aspects of life. As of 20 January 2021, the acute respiratory disease that occurred in Wuhan, China during December 2019, has spread to 219 countries and territories in the world accounting for 9,72,48,333 confirmed cases and 20,80,697 deaths. Even though vaccination against this deadly disease have been started in many parts of the world including India, the human race is still looking forward to an effective antiviral drug against this devastating virus.
For reducing disease severity, viral load and transmission, an effective antiviral COVID-19 drug is essential. Prevention, monitoring and timely intervention plays a pivotal role in reducing the mortality of the ongoing pandemic. In Ayurveda, many medicinal plants are used for treating respiratory tract illnesses. This review focuses on the literature pertaining to selected scientific evidence for the therapeutic potential of *Glycyrrhiza glabra* (liquorice) against COVID-19 available on PubMed. Glycyrrhizin is a triterpene saponin extracted from liquorice roots. Scientists reported the promising results of glycyrrhizin against COVID-19. Glycyrrhizin is used to control COVID-19 in traditional Chinese medicines. Glycyrrhizin has antiviral and anti-inflammatory properties making it a promising drug candidate which needs further investigation for its therapeutic potential against COVID-19.
Keywords: COVID-19, Coronavirus, *Glycyrrhiza glabra*, Glycyrrhizin

PP-78

Molecular diversity and characterization of indigenous salt tolerant plant growth promoting rhizobacteria isolated from different agro climatic zones of Uttar Pradesh revealed *Bacillus* spp. as dominant genera

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A widespread investigation for 9 agro-climatic zones of Uttar Pradesh, India was conducted to isolate and characterize salt tolerant 1-aminocyclopropane-1-carboxylic acid (ACC) deaminase possessing plant growth promoting (PGP) rhizobacteria for salt stress amelioration in rice. For this study, we have isolated 1125 bacteria having the ability to tolerate 1M NaCl and screened for utilizing ACC as sole nitrogen source. The resultant 77 isolates were further evaluated for seed germination assay, PGP and abiotic stress tolerance ability *in vitro*. This evaluation revealed 15 potent rhizobacteria representing each agro-climatic zone and salt stress mitigation *in vitro*. In particular, the biomass obtained for bacteria coated rice seedlings were corroborated with the performance of isolates exhibiting maximum IAA production. Surprisingly based on 16S rRNA, much of the propitious isolates belonged to same specific epithet exhibited variedly in their characteristics. Overall, *Bacillus* spp. was explored as dominant genera *in toto* with

highest distribution in Western plain zone followed by Central zone. Therefore, this study provides a counter-intuitive perspective of selection of native microflora for their multifarious PGP and abiotic stress tolerance abilities based on the agro-climatic zones to empower the establishment and development of more suitable inoculants for their application in agriculture under local stress environments.

PP-79

Phylogenetic prediction and *in silico* comparative modeling of glycoprotein isolated from *nipah virus*

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Nipah virus (*NiV*) is a highly pathogenic member of the family paramyxoviridae that encodes the surface glycoprotein F and G. *Nipah virus*, a member of the genus *Henipavirus* also belong to family paramyxoviridae is highly pathogenic to many species which emerged in 1998 from pteropod fruit bats (flying foxes) and microbats of several species. *Nipah virus* (*NiV*) and Hendra virus (HeV) are newly identified members. Their recent emergence as zoonotic pathogens capable of causing illness and death in domestic animals and humans is a cause of concern. It caused an outbreak of severe respiratory disease in pigs and fatal encephalitis in humans and high mortality rate. NiV can infect a large variety of mammalian species. Transgenic cell lines were generated that expressed either the attachment protein (G) or the fusion protein (F) of NiV. Functional expression of NiV F and G was verified by complementation with the corresponding glycoprotein, which resulted in the development of syncytia. When exposed to NiV and HeV, expression of NiV G in Crandall feline kidney cells resulted in a qualitative inhibition of both cytopathic effect (CPE) and cell death by both viruses. A recombinant soluble form of the HeV attachment (G) envelope glycoprotein (sGHeV) has proven highly effective in protecting small animals from lethal NiV and HeV challenge when used as an immunogen. The phylogenetic prediction, *in-silico* comparative modeling and physicochemical characterization of the envelope glycoprotein isolated from *Nipah virus* was done using different bioinformatics tools. The assessment of generated three dimensional structures through Geno3D software against structure verification tools PROCHECK and WHATIF showed that model generated was acceptable and showed the best results in three dimensional space. The predicted model can be used in structure based drug designing and vaccine development.

Keywords: Nipah virus, glycoprotein, *in silico,* Geno3D, PROCHECK

PP-80

Environmental Biotechnology :Achievements ,Opportunities and Challenges

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This paper describes the state – of –the –art and possibilities of environmental biotechnology and reviews its various areas together with their related issues and implications . considering the number of problem that define and concretize the field of environmental biotechnology ,the role of some bioprocesses and bios stems for environmental protection , control and health based on the utilization of living organisms are analyzed. Environmental remediation, pollution prevention, detection and

monitoring are evaluated considering the achievement ,as well as the perspectives in the development of biotechnology. Various relevant topics have been chosen to illustrate each of the main areas of environmental technology .

PP-81

Therapeutic activity of flavanones against acrylamide-induced hepatotoxicity

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The recent finding that acrylamide (AA), a probable human carcinogen, is formed in foods during cooking raises human health concerns. The relevance of dietary exposure for humans is still under debate. The purpose of the study was to evaluate the possible therapeutic activity of flavanones against acrylamide-induced hepatotoxicity. Cytotoxicity assay **,**Sulphorhodamine Blue (SRB) Assay **.** This study provided evidence showing that active principles flavanones possessed effectiveness against acrylamide induced cytotoxicity on H*epG2 cell lines,* while caffeic acid showed greater efficacy on HepG2 cell lines. This study suggested that caffeic acid and hesperetin may be used as inexpensive and easily accessible sources of potential natural therapeutic agents. Further investigations on a larger number of cancer cell lines and *in vivo* studies should be conducted to investigate the possibility of developing the caffeic acid as promising therapeutic drugs.

Keywords: Acrylamide;Cytotoxicity assay;Sulphorhodamine Blue (SRB) Assay;HepG2 cells

PP-82

The Role of Hemocytes cells in Cell- mediated Immunity of Insects

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The innate immunity is the sole response of invertebrates for the protection against foreign substances and pathogens. The innate immune system of insects is divided into humoral and cellular defense responses. Humoral defenses include antimicrobial peptides, the cascades that regulates coagulation and melanization of haemolymph and the production of soluble effector molecules. The cellular immune response of insects refers to defense responses mediated by hemocytes such as phagocytosis, encapsulation and clotting. Plasmatocytes and granular cells are the hemocytes types involved in these responses. Besides hemocytes a number of humoral effector molecules required for killing different foreign invaders. Insects produce several terminally differentiated types of hemocytes that are distinguished by morphology, molecular and antigenic markers and function. Infectious microorganisms are recognized by binding of hemolymph plasma proteins to microbial surface components. This pattern recognition" triggers phagocytosis and nodule formation, activation of prophenoloxidase and melanization and the synthesis of antimicrobial proteins that are secreted into the hemolymph. The microbes in nodules and parasites in capsules are almost certainly killed by a combination of being entombed in a hard capsule and thus isolated from the nutrients in the hemolymph, as well as the

effects of the cytotoxins, including the products of the prophenoloxidase cascade. The nodules and capsules remain inside the insect's hemocoel until it die.
Keywords: Insects, Hemocytes, Cellular Immunity

PP-83

Phytochemical analysis, Antimicrobial and Antioxidant assay of Bhut jolokia pepper

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Bhut jolokia belongs to the family Solanaceae which belongs to Capsicum chinense species, grown in the North-eastern part of India and held the title of 'world's hottest pepper' from 2007 to 2011 until superseded by Carolina reaper of South Carolina, US. The hotness of chili is mainly due to the presence of capsaicin [N-(4-hydroxy-3 methoxybenzyl)-8-methylnon-trans-6-enamide], with capsaicin content reported to be 0.75 - 4.65 % of its dry weight.

The presented work represents phytochemical analysis, Antioxidant assay, and Antimicrobial activity of Bhut jolokia pepper (Capsicum chinense Jacq) extracted by ethanol as solvent. The ethanolic extract of Bhut jolokia pepper showed the presence of terpenoids, steroids, saponins, and flavonoids. The antimicrobial assay was done with varying concentration (250-1000µg/ml) of pepper extract using tetracycline as control by well diffusion method, the extract at 750 µg/ml shown the best inhibition zone, and Staphylococcus aureus showed the highest zone of inhibition at all concentration compared to other bacteria species with a maximum zone of inhibition of 27 mm. The DPPH scavenging assay for antioxidant activity at 517 nm showed positive activity for scavenging, scavenging increased with the concentration of extract. Thus, Bhut jolokia could be effective in treating diseases caused by Staphylococcus aureus from antimicrobial assay results.

PP-84

Biochemical and Clinical Evaluation of Arjuna plant in HFD induced hypercholesterolemia

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Hypercholesteromemia is a leading cause of cardiovascular disease, well known worldwide major factor of heart attack, hypertension, cardiovascular disease and obesity. In investigation, hypercholesterolemia were induced through continue administration of high fat rich diet. The biochemical and clinical profiles were evaluated significantly. TC, TG, LDL, VLDL and HDL, were alterated due to consumption of high fat rich diet. Level of liver enzymatic markers SGOT and SGPT, renal profile (Urea, Creatinine and Uric acid) were also altered with HFD. A significant reduction was observed with the therapy of ethanol extract of arjuna bark powder. No significant effects were observed in body weight and haematological parameters. In the present study the results were indicate the potential hepato protective and cardio protective action of arjuna plant.
Key words: Arjuna, Hypercholesterolemia, high fat rich diet, lipid profile

PP-85

Spectrophotometric Determination Of Diltiazem In Pharmaceutical Samples With Vanadium (V)

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An analytical method has been developed for quantitative determination of diltiazem, chemically (+)-cis-1,5-benzothiazepin-4-(5H)one, 3-(acetyloxy)-5-[2-(dimethyl amino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-monohydro chloride, by complexation with V(V) spectrophotometrically. Diltiazem is a calcium channel blocker type antihypertensive drug. Diltiazem forms an stable 1:1 complex with Vanadium (V) with λmax 290nm, molar absorptivity coefficient of complex ε = 1.5 mol-1 cm-1, Beer's law range 0.6 mg/ml to 3.6 mg/ml with relative standard deviation was found to be 0.296 and correlation coefficient 1.01. Interference of foreign metal ions and effect of temperature and pH was also studied. On the basis of above studies structure of the complex has been proposed. The procedure is rapid, accurate with precision and can be used by pathologists and in industrial sectors for determination and quality test of diltiazem in pharmaceutical samples

Keywords: spectrophotometric, antihypertensive drug, diltiazem

PP-86

Biotechnological Aspect for the Production of Camptothecin from Callus Culture of Anticancer Medicinal Plant: *Nothapodytes Nimmoniana*

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*Nothapodytes nimmoniana (*syn. *N. foetida)* is endangered plant which rich source of camptothecin (CPT), a well known anticancer alkaloid. The cellular target of CPT is DNA topoisomerase –I inhibitor as potential therapeutic agents. It was extracted from different parts of plant collected from mahabaleshwar region of Maharashtra, India. Callus tissue culture technique were developed using medium composition for enhancement of CPT and were comparatively analysis of CPT contents. The methonolic extract of callus culture grown in optimized medium with growth regulators (gibberellic acid, picloram, thidiazuron). In results, the methonolic extract of callus culture showed a high percentage of CPT as compared to the methonolic extract of fruits, leaves, stem and roots. In conclusion, the concentration of CPT accumulated high from the callus tissue culture comparatively other parts of like fruits, leaves, stem and roots. The optimizing medium showed alternative method for enhance production of CPT.

PP-87

Biogenic synthesis of bi-metallic (Zn-Cu) nanoparticles by leaf extract of *Citrus limon* and evaluation of its antibiofilm activity against *E.coli*

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Nanotechnology is a rising interdisciplinary technology that has been blasting in numerous regions during the ongoing decade, be it medicine, mechanics, optics, material science, plastics or space engineering. Nanotechnology is comprehension and administration of matter at low dimensions of 1-100nm. When bulk material is broken down into nanoscopic range substance with at least one measurement i.e. length, thickness or width, then the discrete particles exhibit unforeseen properties that are completely unassociated with those of bulk material. Synthesis of nanoparticles can be carried out via physical, chemical and biological methods. Though physical and chemical methods are widely in use but in recent times, researchers give more importance to greener route of nanoparticle synthesis as it is non-polluting and also less expensive. Metal nanoparticles can be monometallic or bi-metallic. Bimetallic nanoparticles comprise two definite metals, having characteristic amalgamation and chemical chronology that give them unique geometry and specific functions. They show better stability, selectivity and catalytic activity as compared to their monometallic counterparts. Alloyed nanoparticles show increased solubility with reduced particle size thereby surpassing monometallic nanoparticles in functionality as these properties improve their optical, catalytic and electronic purpose. We carried out synthesis of bimetallic Zn-Cu nanoparticles using ethanolic extract of dry lemon leaves. Synthesized particles were then characterized using several biophysical approaches such as P-XRD, FTIR and SEM-EDX. Among all infections prevailing in surroundings percentage of UTI is 46.48% and most common bacteria causing it is *E.coli* which forms biofilm around itself and become resistant to environmental strains as well as to many antibiotics making it difficult to curb an infection. Hence, antimicrobial and antibiofilm activities of synthesized bimetallic Zn-Cu nanoparticles was checked via well diffusion and microtiter plate assay respectively. Our study gave significant results and therefore, it can be beneficial to develop nanotechnology based drugs against bacteria causing biofilm associated infections.

Key words: Nanotechnology, Bimetallic, *E.coli*, Biofilms.

PP-88

Green synthesis of Copper Nanoparticles using Leaves Extract of *Ficus religiosa* and Evaluation of their Antimicrobial Potential with Special Reference to Wound Associated Biofilm Forming Pathogens.

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Biofilm is a major factor responsible for impaired/delayed healing of wounds as it creates hindrance in healing processes, resulting in delayed wound healing. Impaired healing leads a wound from acute to chronic state of inflammation. Due to inflammation in wound site bioburden gets increased and become a major problem as it constitutes descendent tissue cells, proteinaceous exudates, and microorganisms which are responsible factors for prolonged infection leading formation of strong biofilm. Wound biofilm is impervious to host immune system they can feed off the secreted exudates and

promotes inflammation. Microorganisms endorsed in biofilm secrete matrix like substance known as exopolysaccharides (EPS) which procreates a high counteraction to host immune responses and limit the penetration of antibiotics into wound-biofilm system. This study is related to synthesis of metallic nanoparticles using plant extract of *Ficus religiosa* and to check their efficacy as a potential antimicrobial agent with special reference to wound associated pathogens which are reported to form biofilm in chronic wounds. In this study microorganisms were isolated from clinical samples obtained from wounds and their identification and pathogenicity were tested by biochemical and haemolysis test. Biosynthesis of copper nanoparticles were done using *Ficus religiosa* plant leaves extract and were characterised using UV Visible, XRD and FTIR techniques and their efficacy evaluation is checked by Well diffusion method and Minimum inhibitory concentration tests. The microbes isolated from wound samples were pathogenic as per the observed haemolytic patterns. Synthesised copper nanoparticles were having an average particle size of 26 to 100 nm. They are eco-friendly, economic and biocompatible in nature. These particles have shown effective antimicrobial property towards the wound associated pathogens so further can be used for drug designing purposes to sustain fast healing of the chronic wounds infected with biofilm and biofilm forming pathogens.

Key words: Nanotechnology, Biofilm, wounds, copper nanoparticles.

PP-89

The role of microalgae in biosorption of nanoparticles

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Nanotechnology is growing rapidly, and its applications are enormous. Rapid use of Nanoproducts, have become toxic for both human health and environment. Nanoparticles have been increasingly released into environments particularly water bodies get severely deteriorated with discharged nanomaterials. Nanoparticles can enter human body through various routes and shown very dangerous diseases like asthma, cardiac diseases, cancer and many more. Biosorption has emerged as the most promising technology which uses living plants as well as dead biomass of plants for removal of toxic substances from water to make them harmless. On the basis of various experiments and reports, algae have been recognized as natural water purifiers. Micro algae have received much attention due to their capability to absorb metals and uptake toxic elements from the environment *Chlorella* and *Scenedesmus* are widely used green algae as compared to other species for removing toxic metals from aquatic system as they can tolerate metals like Copper, Nickel, Cadmium, Lead, Mercury, Titanium, Arsenic and Zinc. So, the objective of this research to develop a method for bio-sorption, immobilization and application using *Chlorella* and *Scenedesmus* (green algae) biomass as a biosorbents for effective removal of toxic nanoparticles from aqueous solutions.

Keywords: Nanotechnology, Nanoparticles, Toxicity, Biosorption, Microalgae

PP-90

Application of calcium chloride in Pea (*Pisum sativum*) to alleviates the effect of drought stress

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Plants use different adaptive mechanisms to cope with drought at morphological, physiological, and biochemical levels. All organisms use a network of signal transduction pathways to adapt to the environment. Among these pathways, a calcium (Ca2+) ion plays an important role as a universal second messenger. Calcium plays a fundamental role in regulating the polar growth of cells and provides the protection against various stress factors. This study was conducted to examine the role of Ca^{2+} in ameliorating the adverse effect of drought stress responses in two contrasting pea genotypes, AIB 1 (drought sensitive) and AIB 2 (drought tolerant), differing in their drought tolerance. The plant were treated with mannitol (100mM and 200mM) and then supplemented with CaCl2 (2mM, 5mM, 7mM and 10mM). Morphological measurements are recorded, shoot length, leaf and root length, shoot and root width, shoot and root weight. Our finding provide evidence of the protective role of calcium in conferring better tolerance against mannitol- induced drought stress in pea genotypes, which could be useful as genetic stock to develop pea tolerant varieties in breeding program.

Keywords: Pea, abiotic stress, Calcium chloride, Mannitol

PP-91

Effect of COVID-19 on Diabetic Patients: A Systematic Review

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The high prevalence of diabetes is an important comorbidity in COVID-19 patients. We look up and analyze data on the relationship between COVID-19 and Diabetes, Diabetes disease pathophysiology and Diabetes management patients who have developed a COVID-19 infection.

The disease burden of Coronavirus Infectious Disease 2019 caused by Severe Acute Respiratory Syndrome (SARS CoV 2) has been steadily increasing with more than one million confirmed patients and more deaths worldwide**.** With widespread diabetes, it is very important to understand the aspects of COVID-19 infected people with diabetes. This is becoming very important because, in most parts of the world, there is full lock-up and the autonomy of patients is limited to counteracting this pandemic. The vast amount of data from parts of the world has accumulated from COVID-19. The aim of this manuscript is to carry out a systematic review and analysis in order to assess the risk of drugs and the risk of death in diabetic patients with COVID-19 infection.

There is evidence of increased incidence and severity of COVID-19 Diabetes patients. COVID-19 may have an impact on the pathophysiology of diabetes. Blood Glucose level control is very important not only for those who suffer from COVID-19, but also for those who do not have this disease. Innovations such as telemedicine and also diet and exercise are useful in treating patients with diabetes in today's difficult times.

Keywords: COVID-19, Diabetes Mellitus, SARS CoV-2

PP-92

Development of Polymeric charge storage electrets for microelectronics applications

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Polyvinyl carbazole (PVK) is a polar polymer that exhibits excellent chemical resistance and good mechanical properties. Inspite of its activeness for many applications, the various mechanisms are presently not well understood. In the present work, we have attempted to identify the nature of the thermally stimulated discharge currents in pure and malachite green doped polyvinyl carbazole (PVK) samples by comparing the observed dependence on parameters such as electric field, polarization temperature, time and dopant between the charge and discharge currents. The thermally stimulated discharge current (TSC) and Fourier transform infrared spectroscopy (*FTIR)* have been recorded in 50 μm thick samples of pure and malachite green doped PVK samples. The study has been carried out by TSDC patterns of electrets formed by polarization method in the range of 300 to 900 volts field strengths at 45°C to 75°C with constant heating rates. The samples of pure and malachite green doped PVK were prepared in the laboratory by solution cast technique. The various results described in short circuit TSDC has indicated that the electrets state in pure and malachite green doped PVK samples is due to dipole polarization and space charge polarization. The results on pure and malachite green doped PVK samples by FTIR and TSDC we have concluded that impregnation of malachite green in polymer matrix forms charge transfer complexes.
Keywords: TSDC, activation energy, PVK, FTIR

PP-93

Challenges And Issues In Healthcare System Using Big Data Analytics

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The areas of science, engineering and technology are generating data at an exponential rate every day. big data helps us to discover many areas not limited to education, health and law. Big data analytics has the opportunity of superior patient care and medical decision support. this paper, review the various procedures of big data analytics in the domain of healthcare. This paper also specify different platforms and algorithms for big data analytics. The focus of this paper is not limited to the improvement and analysis of the data, It also focus on the strengths and drawbacks compared to the conventional techniques available.
keywords:- Bigdata analytics, Structured data, Business intelligence, Machine learning.

PP-94

Impact of 5G RF Radiations on Society

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Wireless technologies are highly in demand due to mobile nature of devices. Henceforth need of exploration in communication sector increases as per demand in the market. Most of the marketing industries are dependent on internet for their businesses. Due to wireless connections lots of electromagnetic radiations are in the air. The entire nature is exposed to these radiations without understanding the hazards. 5G is a massive interconnected network used for telecommunications, in which short wavelength RF (Radio Frequency) radiations are emitted and now a days an issue of health and safety. The exposure to 5G radiation can cause different effects on the biodiversity, which can cause loss of species and can generate different diseases. This research is based on understanding the impact of 5G radiations on the society.
Keywords: 5G, RF, telecommunication.

PP-95

Arbuscular Mycorrhiza-interaction for improved Salinity Tolerance in Cowpea (*Vigna unguiculata L.*Walp).

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The aim of the study was to examine the effect of arbuscular mycorrhizal fungi (AMF) on the morphological attributes in cowpea (*Vigna unguiculata* [L.] Walp. subjected to salt stress. Salt stress (0.25%, 0.35% and 0.45% NaCl) reduced germination, shoot length, no. of leaves, no. of flowers, no. of pods and no. of seeds per pod of cowpea. AMF ameliorated the negative impact of salinity on the growth parameters studied. AMF-inoculated plants provide efficient protection against salt stress and gives strength to the plant's defense system. AMF also increased uptake of mineral elements of plant. The present study shows that AMF possesses the potential to enhance salt tolerance of cowpea.
Key words- Arbuscular mycorrhizal fungi (AMF), Salt stress, Cowpea

PP-96

Serum estradiol associate oxidative stress: A major cause of breast cancer

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Estrogen is hormone produced by a woman's ovaries, help to prepare the body for ovulation and in the development of secondary sex characteristics. It is a chemical messenger that is important for normal growth and development of a woman's breasts, uterus and ovaries. It is also important for childbearing and regulation of woman's menstrual cycles. The naturally occurring estrogens 17 *b* -estradiol(E 2), estrone (E 1),

and estriol (E3) are C 18 steroids derived from cholesterol. Estrone and estriol are primarily formed in the liver from estradiol. The role of estrogen receptors in the development of estrogen-dependent human breast cancer is well known but the role of serum estrogen in breast cancer is less explored so the this study is planed find out role of serum estradiol associated oxidative stress in breast cancer. Total 200 subjects were selected for the study and the results were compared with the control. Serum estrogen and oxidative stress parameters such as Reduced glutathione (GSH) in conjunction with glutathione peroxidase (GPx) and glutathione S-transferase (GST) and lipid peroxidation were analysed in both the groups.
The results of study indicates that the higher level of serum estrogen and its metabolism plays important in development of oxidative stress which ultimately may leads to breast cancer. The study may be helpful for the establishment of serum estrogen as breast cancer marker.

PP-97

Nano-fertilizers and Its Role in Plant Nutrient Management

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The applications of improvised fertilizers using nanotechnoloy could be one approach which includes development of nanofertilizers that can contribute significantly to improve crop production. Nano fertilizers due to their characteristic features play an important role in agricultural system. Nano fertilizers cause increased efficiency of the micro and macro elements, which can be available to plants. The use of nano fertilizers offers a several potential advantages in agriculture system over application of traditional fertilizer. Nano fertilizers release nutrients into the soil sustainably and in a regulated way. Nano fertilizer helps to optimize nutrient management and facilitates higher nutrient use efficiency in plants at different developmental stages causing increased yield as compared to conventional applications of fertilizers. With the advances nanobiotechnology, it offers several opportunities in agriculture system for better nutrient management and crop yield. In the recent years several studies indicated the potential benefits of nanofertilizers in precise agriculture system that supports the soil nutrient enhancement, minimize nutrient loss, and also reduces the soil toxicity created due to the indiscriminate applications of traditional fertilizers in conventional agriculture system.
Key words: Nanofertilizers, nutrient use efficiency , crop production, sustainable agriculture

PP-98

Antimicrobial Activities of Synthesized Gold Nanoparticles against *Escherichia coli* and their *in-vitro* Toxicity Assessment

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Safe drinking water in an urban city has been a great challenge for human population. Consumption of contaminated water may lead to occurrence of several diseases. Enterotoxigenic *Escherichia coli* (ETEC) is an enteric pathogen which can survive even

in treated drinking water and cause watery diarrhea. The pathogen harbours virulent and drug-resistant genes responsible for its virulence and antibiotic resistance. Persistence of such strains of ETEC are often associated with disease outbreaks. The present work involves antimicrobial activity of synthesised Gold nanoparticles against ETEC, isolated from drinking water. Gold nanoparticles (AuNPs) were synthesized using biological approach and characterised by UV-visible spectroscopy and Electron Microscopy. The morphology of nanoparticles was found to be quite spherical within the range of 20-30 nm. AuNPs were effective as antimicrobial agent against ETEC. Cytotoxicity assay was performed to evaluate the toxicity of synthesized nanoparticles. It was evaluated by using sulforhodamine B (SRB) assay on Vero cell line. Study revealed that the synthesized AuNPs and do not exhibit any toxicity within the experimental range of antimicrobial concentration of AUNPs and therefore these are safe.

Keywords: Enterotoxigenic *Escherichia coli*, Drug-resistance, Gold nanoparticles and Cytotoxicity.

PP-99

Gut Microbiota-Brain Interaction with Special Reference to Alzheimer's disease

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Gut microbiota is showing and raising evidence that the dynamic changes in the gut microorganism can influence physiology and behavior of brain. Dysbiosis or dysbacteriosis is a condition of microbial imbalance inside the intestinal microbiome. It has been associated with disorders of intestinal and extra-intestinal such as inflammatory bowel disease and other multiple diseases like asthma, diabetes mellitus, rheumatoid arthritis and autism. Microbial dysbiosis is also linked to neurodegenerative disease like Alzheimer and Parkinson. Gut microflora and brain have dynamic bidirectional relationship. Butyrate synthesized by the gut bacteria through the fermentation of nondigestible fibers or polysaccharides. Butyrate obtained from gutmicrobiota has a noteworthy impact on the health of the gut, but the effects of butyrate go away from the colon to the brain. Butyrate has a most important effect on gene expression especially in the brain. It functions like a histone deacetylase inhibitor (HDAC) affective to the gene activation in brain. Butyrate can protect cell death of brain neurons from conditions like Alzheimer disease (AD). It has a weighty impact on memory and help in improving capacity of learning especially in condition like dementia. In some studies it has found that butyrate played an important role in cell repairing mechanism and provides protection against cell damage from toxic metals. In humans, it is reported that metals like mercury, lead and copper are concerned in dementia in Alzheimer disease susceptible patients.

Key words: Gut microbiota, Dysbiosis, Alzheimer disease, Histone deacetylase inhibitor (HDAC), Brain.

PP-100

Photosynthetic Microbes Based Nutrient Oxide Nanoparticles Enhance Plant Growth

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Plants require macronutrients and micronutrients for their proper growth. The deficiency of either type of nutrients inhibits and results in retarded plant growth. The emergence of nanotechnology allows us to rethink about plant growth promotion by providing nutrients in the nano sized forms. In this effort several nanoparticles are synthesized and characterized from various plants and microbes. Photosynthetic prokaryotic microbes *viz.* cyanobacteria can also be utilized for the synthesis of oxide nanoparticles of macro and micronutrients. Since several cyanobacterial strains are used as natural biofertilizers, their application in the synthesis of nutrient oxide nanoparticles will be more favorable. The application of these oxide nanoparticles facilitates the growth of plants to a larger extent. This was observed that the application of photosynthetic microbes based oxide nanoparticles not only enhance the root but also shoot length. This observation was taken both in lab condition and field conditions. There are very few reports in this aspect and intensive research and its application at agriculture field level is required a lot.
Keywords: Photosynthetic microbes, oxide nanoparticles, plant growth promotion

PP-101

Bioengineered Nanoparticles and their Role in Drug Delivery

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Nanotechnology plays a significant role in the development of current research. Green synthesis of nanoparticles is gaining more importance owing to its simplicity, rapid rate of synthesis, attractive and diverse morphologies, elimination of elaborate maintenance of cell cultures and eco-friendliness. Employing plants towards synthesis of nanoparticles are emerging as advantageous compared to microbes with the presence of broad variability of bio-molecules in plants can act as capping and reducing agents and thus increases the rate of reduction and stabilization of nanoparticles. Nanoparticles have a wide range applications in biomedical such as drug and gene delivery, biosensor, cancer treatment and diagnostic tool. Drug delivery systems have an important role to play in the administration of drugs, vaccines, and diagnostic agents. Delivery of the drugs can be achieved using various types of dosage forms including tablets, capsules, creams, ointments, liquids, aerosols, injections, and suppositories. However, for these novel delivery methods to succeed and compete with those already on the market, the prime issues that require consideration include device design and safety, efficacy, ease of handling, and cost-effectiveness. This work provides a detail of the next generation of active delivery technologies.
Keywords: Green synthesis, Nanoparticles, Drug Delivery, Medicinal Plant

PP-102

Restoration of water quality through microorganism consortium

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We are living in a scenario where development is necessary in every part of the sector. Due to increased industrialization and agricultural practices there is rapid reduction in the quality of water. These practices produces large amount of organic waste which not only reduced the quality of water but also causes disease. The compounds like ammonium chloride, lindane and DDT depletes the dissolve oxygen content and increase toxicity of water. Due to this marine life is affecting. Hence removal of ammonium chloride (NH3+)(Cl-), lindane and DDT is necessary before pouring industrial effluent into water bodies .These treatment can be carried out by using microbial consortium .Consortium contain mixed culture of the bacteria which increase its capacity of degradation by showing communalism relationship as waste from one organism becomes the source of energy for the other organism . Bioremediation is a eco friendly, cost effective and safe technique which improves quality of water, maintain stability in aquaculture, degrade toxic and organic compounds to carbon dioxide or less toxic material.
Keywords: Bioremediation, microbial consortium, nitrification and denirification.

PP-103

Development and characterization of *in-silico* based EST-SSR markers in *Withania somnifera* & *Centella asiatica*

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Simple sequence repeat (SSR) markers obtained from expressed sequence tags (ESTs) are primary resources for gene discovery and mapping. The objectives of the work presented here are to develop EST based SSR markers in, *Withania somnifera* (Ashwagandha) and *Centella asiatica* (Indian pennywort) and to study it. Both the plants are medicinally important and contain several alkaloids, essential proteins and metabolites. In this study, a total of 742 *Withania somnifera* EST sequences & 4501 *Centella asiatica* EST sequences retrieved from dbEST database in FASTA format. (http://www.ncbi.nlm.nih.gov/nucest) on 17 June 2020, among these EST-SSRs, for *Withania somnifera* 335 SSRs identified 306 repeat units for mononucleotide repeats, 11 repeat units for dinucleotide repeats and 18 repeat units for trinucleotide repeats. Where, for *Centella asiatica*, there were 1389 SSRs identified 1122 repeat unit for mononucleotide repeats, 171 repeat units for dinucleotide repeats, 91 repeat units for trinucleotide repeats and 5 repeat units of tetranucleotide repeats. Out of these SSR-containing ESTs, a total of 25 primer pairs were designed for *Withania somnifera* and 50 primer pairs were developed for *Centella asiatica*. After the BLAST alignment of EST-SSR, their fuctions were identified, many of them were gene-related proteins and many of them were essential proteins, also many metabolically active proteins and enzymes were identified in both of the plant.
Key Words: Expressed Sequence Tag, Simple Sequence Repeats, *Withania somnifera* and *Centella asiatica.*

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PP-104
GENE EDITING IN DESIGNER BABIES
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A designer baby is a baby whose genetic makeup has been selected or altered, often to include a particular gene or to remove genes associated with a particular disease and characteristics. Genetically altered embryo can be achieved by introducing desired genetic material into embryo itself or into the sperm and egg cells of the parents, either by delivering the desired genes directly into the cells or using the genetic engineering. Some scientist condones the use of this technology to treat disease, some have raised concerns that could translate into using technology for cosmetics means. CRISPR is used in this and programming favorable traits in embryos may not be used not only to eliminate the mutation of life –threatening disorders but also to enhance "human capabilities" A trait can be programmed in embryos only when criteria are met: The trait must be predominantly determined by DNA, which means that it is heritably 100% or close to it. The lower the heritability, the greater the role of nongenetic factors such as lifestyle, education and stress and the lower the likelihood that the presence of human trait, eye color, has an estimated heritability of 98% and hair curliness of 85-90%. For enhancement to be practical, the traits in question must be caused by single variant or an interaction among a limited number of variants. There is no sound scientific reason to perform this type of gene editing on human germline, and that the behavior of He and his team represents a gross violation of both Chinese regulation and the consensus reached by international science community of scientist and regulators to initiate a comprehensive discussion to develop criteria for introducing genetic modifications. The improved technologies for introducing genetic disease.

PP-105
ROLE AND IMPORTANCE OF GENETIC COUNSELING IN PRENATAL DIAGNOSIS OF DISEASE
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Genetic counseling may result in better outcomes when the participants understand what to expect, and at least theoretically, anybody could be suggested for a benefit from genetic counseling. Thus to identify cases around genetic counseling awareness and its perceptions of its purpose, we surveyed the Madhya Pradesh (India) region population. We acquired 150 respondents owing to demographically representative sample and called them to participate in a questionnaire survey. We administered a purpose planned review including questions with respect to their demographics, their occupation, age, regardless of whether the individual had known about hereditary advising, etc. Responses to these 20 questions were utilized to create a total "knowledge score". Out of the 150 people, 109 individuals successfully submitted their response against the questionnaire and remaining 41 couldn't present the survey. Most of the respondents (52.7%) had not known about the term hereditary and some of them believed that hereditary guiding prevents genetic diseases and abnormalities. The subject of hereditary advising is of critical ramification for both the short and long haul; its ethical aspects are paramount. In the center of ethical questions is the comprehensiveness of information provided to the couples or patients and

counseling them about results and making informed educated decisions. In addition, it is crucial how sensitive personal information is treated and whether and how it should be made public.
Keywords: Genetic counseling awareness, Genetic counseling, Genetic counselor, public perception.

PP-106
CRISPR/Cas9: Development and Application in *Oriza sativa* Breeding
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Targeted nucleases for genome editing, such as Zinc finger nucleases (ZFNs) and transcription activator like effector nucleases (TALENS), are important tools in plants for understanding gene functioning and developing useful new traits. The frequently interspersed clustered short palindromic repeats (CRISPR)/Cas system has recently emerged as an alternative approach for successful and scalable genome engineering based on nuclease. To target different genes, only the 20-nt targeting sequence within the single-guide RNA (sgRNA) needs to be modified in this method. In this study, the sgRNA scaffold vectors were cloned form target-specific sgRNA oligos. Further it is processed for the isolation of protoplasts, followed by the PEG mediated transformation of protoplast and includes the genome DNA extraction. The process is further continued with the detecting of the mutations in protoplasts and the stable transformation of rice using the biolistic method and the detection and sequencing of indels in transgenic rice plants. The simplicity of the cloning method and the few constraints on possible target sites make the framework of CRISPR/Cas very attractive. In protoplast, the CRISPR/Cas system provides a simple technique for rapid gene targeting within 1-2 weeks, mutated rice plants can be produced within 1317 weeks.
Keywords: CRISPR/Cas9; Oriza sativa; Ggene engineering; Indels; Single-guide RNA

PP-107
EFFECTS OF NANOFERTILIZERS ON SQUASH
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The production of manganese zinc ferrite nanoparticles for the use as fertilizers for cucurbita pepo L .Manganese, zinc, and iron are the most essential micronutrients needed for plant growth and are implemented as foliar fertilizers. Here, a simple template-free microwave-assisted hydrothermal green synthesis technique was acclimated to produce manganese zinc ferrite nanoparticles (Mno.5Zno.5Fe204 NPS) at varying temperatures (100, 120, 140, 160, and 180 o c). The prepared nanomaterials were operated at various concentrations (O, 10, 20, and 30 ppm) as foliar nano fertilizers during the squash (Cucurbita pepo L) planting process. X-ray diffraction patterns of the prepared nanomaterials established the flourishing result of the nano ferrite material. The prepared nano fertilizers showed type IV adsorption isotherm property for mesoporous materials. . FE-SEM and HR-TEM imaging showed that the nanoparticles were cubic shaped and expanded in particle size with the increase in microwave temperature during production. The consequence of the application of the synthesized ferrite nanoparticles on vegetative growth, proximate analysis, minerals content, and the yield of the squash plant was investigated for two consecutive successful planting seasons. The nano ferrite synthesized

at 160 o c and applied to the growing plants at a concentration of 10 ppm gave the highest increase in % yield (49.3 and 52.9%) compared to the untreated squash for the two consecutive seasons, whereas the maximum organic matter content (73.0 and 72.5%) and total energy (260 and 258.3 kcal/g) in squash leaves were obtained in plants treated with 30 ppm ferrite nanoparticles synthesized at 180 o c. On the other hand, the maximum organic matter content (76.6 and 76.3%) and total energy (253.6 and 250.3 kcal/g) in squash fruits were attained with plants supplied by 20 ppm ferrite nanoparticles synthesized at 160 o c. These results show that the simple template-free microwave-assisted hydrothermal green synthesis technique for the production of manganese zinc ferrite nanoparticles yields nanoparticles appropriate for use as fertilizer for Cucurbita pepo L.

PP-108
REMDESIVIR AS AN EFFECTIVE DRUG AGAINST COVID-19
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In the past few months, attempts to create an effective drug against the emerging global pandemic,COVID-19, have increased. Drug discovery methods for targeting RNA dependent RNA polymerase (RdRP) of Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is being studied globally. The gene encoding this protein, is known to be conserved amongst positive strand RNA viruses. This helps the drugs developed against previously documented RdRP inhibitors to reconfigure a path. Remdesivir, which has been used against EBOLA infections, is one such powerful inhibitor. By using classical molecular dynamics and ensemble docking method, the binding of remdesivir to RdRP of SARS-CoV-2 has been examined. A comparative study of the simulations of RdRP in the apo and remdesivir-bound form revealed blocking of the template entry site in the presence of remdesivir. The conformation changes leading to this event were captured through principal component analysis. The conformational and thermodynamic parameters supported the experimental information available on the involvement of crucial arginine, serine and aspartate residues belonging to the conserved motifs in RdRP functioning. Strong interaction with remdesivir was observed at a catalytic site consisting of SER 759, ASP 760 and ASP 761 (SDD). The considerably strong interactions of Remdesivir and these residues may infer the former's binding similar to the normal nucleotides there by remaining unidentified by the exonuclease activity of RdRP. The ensemble docking of remdesivir too, comprehended the involvement of similar residues in interaction with the inhibitor. In the design of inhibitors, this knowledge on critical interactions between preserved RdRP residues with remdesivir via in silico approaches may be useful.

PP-109
Diagnosis of COVID-19
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In December of 2019 the spread of coronavirus disease 2019 pandemic world needs diagnostic system capable of rapid detection of Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Measure taken to reduce its spread critically depend on timely and identification of virus-infected individuals by the sensitive and specific

method available, i.e. real-time reverse transcriptase Polymerase chain reaction (RT-PCR). There are many commercial kits have recently become available. In this work we performed an independent evaluation of the RealStar.

The aim of this study was to compare basic analytical and clinical performance of selected RT-PCR kits from different manufacturers (Altona Diagnostics, BGI, CerTest Biotec, KH Medical, PrimerDesign, R-Biopharm AG, and Seegene). But here, we use only (ALTONA) for SARS-COV-2. A comparative limit of detection (LoD) evaluation was performed between RealStar. SARS-COV-2 test was also performed 83 primary samples in comparison with WHO-PCR . We conclude that all RT-PCR kits assessed in this study may be used for routine diagnostics of COVID-19 inpatients by experienced molecular diagnostic laboratories.

In results the RealStar SARS-COV-2 was proven a slightly higher than the WHO recommended test with a limit of detection at 625 copies/mL instead of 1250 copies/mL for the WHO-PCR in conditions. The agreement between RealStar SARS-CoV-2 and WHO-PCR on 83 clinical samples was 97.6 % (81/83) with a sensitivity at 97.8 % (45/46) and specificity at 97.3 % (36/37).

In comparison of the RealStar® SARS-CoV-2 test with WHO assay, we observed a slightly better sensitivity of the RealStar test. It provides a durable option for all molecular biology laboratories, with a strong real-life LoD and is compatible with various real-time PCR platforms.

KEYWORDS: Corona virus, COVID-19, RT-PCR, SARS-COV-2, Sensitivity, pandemic

PP-110

Diagnosis of HIV

Sakshi Bansal

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Human immunodeficiency virus (HIV) is a lentivirus that leads to acquired immunodeficiency syndrome (AIDS). Different HIV testing kits have been developed to detect antibodies directed towards different part of HIV. Therefore, to overcome this challenge, a wide range of biosensors have been developed for early diagnosis of HIV infection. HIV infected patients are easy to combine with various opportunistic infection due to their low immunity, improving microbiological diagnosis in these patients is of high priority clinical importance. The specific test for diagnosis of a HIV infection are screening test. Enzyme linked immunosorbent assay (ELISA), simple agglutination assay etc. Such as nucleic acid, genes are used in nanomedicine, biosensors to enable Cary diagnosis of HIV. Despite the significant progress in HIV biosensing in the last years, there is a great need for the development of point-of-care (POC) technologies which are affordable, robust, easy to use, portable, and possessing sufficient quantitative accuracy to enable clinical decision making.Globally, 36.9 million people are living with human immunodeficiency virus (HIV) infection/acquired immunodeficiency syndrome (AIDS). HIV infection reduces the number and functionality of CD4 helper lymphocytes and CD4 lymphocytes direct acquired immunity against most pathogens. More specifically an estimated 94,0000 people died from HIV – related causes globally in 2019 (for the number of AIDS – related death). Therefore, the early diagnosis of HIV infection is of great importance for all scientists around the world. HIV infection is often diagnosed through enzyme linked immunosorbent assay (ELISA) which detects the presence or absence of HIV antibodies (such as IgM/ IgG, Abs). This best analyzes blood or saliva for antibodies to the virus.

PP-111
CONVALESCENT PLASMA THERAPY AND COVID-19
Sneha Verma
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In humanity, a pandemic appeared in late December or early January. The novel corona virus causes Covid-19. The first case was reported in December 2019 in Wuhan, China. Specific drugs for its treatment have not yet been approved, however, convalescent plasma (CP) treatment is expected to increase survival rates. Several studies suggest that CP can be used to treat developing infectious diseases. Plasma treatment involves bringing the patient as needed - usually severely ill, resistant to current treatment, and even malignant infection - plasma or specific, differentiated, antibodies as well as other medical factors that can be obtained from immunoglobulin and immune blood. Donors; Donors (voluntary and philanthropic) are individuals or beliefs with active immunity. Plasma therapy was used from the Spanish flu in 1917-1918, and while regular viral infections threatened the vulnerable population, the final report was the 2013–2015 Ebola virus outbreak in West Africa. The exact mechanism of action of plasma therapy has not been fully elucidated as it works beyond purifying and neutralizing antibodies.
Key words: Convalescent plasma therapy, prophylaxis, treatment, COVID-19

PP-112
STEM CELLS TRANSPLANTATION IN LEUKEMIA TREATMENT
Shivani Bramhe
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Stem cells (SCs) accept a noteworthy part in forefront fields of regenerative medicine additionally, other assessment zones. They are related with the recuperation of hurt tissue or cells, In light of their self-restoration characteristics. Tissue or cells can be hurt through a collection of Diseases, including hematologic and no hematologic malignancies. Concerning this, stem Cell transplantation is a cell healing approach to manage restore those weakened cells, tissue, Or on the other hand organs. SCs have a medicinal potential in the usage of primary microorganism transplantation. Investigation has been based chiefly on the use of hematopoietic SCs for transplantation. Line platelets and human leukocyte antigen–heliocentrically patrons are thought of Optional wellsprings of hematopoietic essential microorganism transplantation. Of course, pluripotent Beginning phase SCs and prompted pluripotent SCs hold ensure for movement of juvenile microorganism Transplantation. Moreover, non hematopoietic mesenchymal SCs play their own immense Part as a valuable bone-marrow strength and in the organization of join versus have ailment impacts during the post transplantation cycle. In this study, the capacity of different kinds of SCs is offered regard to their application in SC transplantation. Likewise, the Remedial assessment of auto logos and allergenic hematopoietic undifferentiated cell transplantation is overviewed concerning different sorts of leukemia. Especially advanced and reformist Consistent investigation has focused in on the utilization of central microorganism transplantation on unequivocal Leukemia types. We surveyed and took a gander at the therapeutic capacity of SC transplantation With various kinds of leukemia. This review proposed to focus in on the utilization of SCs in the Treatment of leukemia.

PP-113

Anticancer properties of essential oils formulated into nano emulsion

Tanuja Singh Tomar
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The most common cause of death after cardiovascular diseases is cancer. Among women the most common cause of cancer death is breast cancer. Research's for developing new and more effective drugs are going. Essential oils are one of the potential drugs for cancer as it has many benefits including its anticancer properties. In this study two medically important essential oils were taken ADEO and ZMEO were taken. The EO's were formulated into nano emulsion using spontaneous emulsification approach. Stability test were performed to select optimum nano emulsions for each EO. Anti-cancer properties of formulated ADEO and ZMEO was significantly better than non-formulated form. ZMEO comes as a more effective antioxidant and it also have better anti-cancer properties when observed its effect on the four human breast cancer lines.
KEYWORDS: Cancer, essential oils, nano emulsion.

PP-114

COLOROMETRIC AND ELECTROCHEMICAL DETECTION OF PATHOGEN IN WATER USING SILVER IONS AS A UNIQUE PROBE

Vishnu Shaji
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The manuscript highlights the efficacy of silver ions to act as a unique probe for the detection of bacterial contamination in water samples. The bacterial cell membrane adherence property of the silver ions was employed to develop two different bacterial detection assays employing colorimetric and electrochemical techniques. In one of the schemes, silver ion was used directly as a detector of bacteria in a colorimetric assay format, and in the other scheme surface-functionalized antibodies were used as a primary capture for specific detection of *Salmonella enterica serovar typhi.* The colorimetric detection is based on silver-induced inhibition of urease activity and silver ion utilization by bacteria for the rapid screening of enteric pathogens in water. The specific detection of bacteria uses an antibody-based electrochemical method that employs silver as an electrochemical probe. The ability of silver to act as an electrochemical probe was investigated by employing Anodic Stripping Voltammetry (ASV) for targeted detection of *Salmonella typhi.* For further insights into the developed assays, inductively coupled plasma mass spectrometry (ICP-MS) and transmission electron microscopy (TEM) studies were performed. The sensitivity of the developed assay was found to be 100 cfu mL−1 for colorimetric and 10 cfu mL−1 for electrochemical assay respectively.

PP-115

Progress of Computational Machine Learning for Advancements in Nanoparticles and Nanomaterials

Yash Vashishtha
Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior

As the technology in nanomedicines (NMs) and nano-particles (NPs) advance, coupled with creating advanced materials at the nanoscale, it's also a concern to know whether it's safe to use or not. Special attention must be paid toward safe design approaches for nanomaterial-based products. By using today's technology such as artificial intelligence

(AI) and machine learning (ML) the understanding towards the topic can be increased by enhancing and improving the simulation and modeling process for nanotoxicology. The objective of this review is to know how Physiologically based pharmacokinetic (PBPK) modeling and absorption, distribution, metabolism, and excretion (ADME)-based in silico methods helps in finding the blind spots of nanotoxicity caused by the nanomedicines (NMs) and engineered nano-particles (ENPs). There are many computational tools (The computational OMICS, colloidal particle determination, and algorithms to establish dosimetry for inhalation toxicology, and quantitative structure–activity relationships at nanoscale (nano-QSAR)) that have assisted in finding toxic endpoints and different pathways taken by NMs and ENPs that can help in acceleration of clinical translation of these NMs and ENPs.

Amity Institute of Biotechnology
Amity University Madhya Pradesh, Gwalior

Biotechnology has emerged as a major discipline not only in industrial terms but also as academics. The frontier areas of biology are being integrated to enhance the quality of Food products, Agriculture, Medical and Environmental conditions. Integration of advanced aspects of traditional biological sciences of Zoology, Botany, Biochemistry, Genetics and Microbiology, this course has been evolved to meet the demands of the Research and Industry based world. The interdisciplinary approach and the emphasis on research and publication is the novel method used in this course to make it more contemporary and relevant. The global developments in Biotechnology need to be understood and harnessed by the Research Scientists in India at all the levels viz. undergraduate, postgraduate students, Ph.D. With these objectives Amity Institute of Biotechnology, was established at the Amity University Madhya Pradesh, Gwalior (M. P.) in 2011 for teaching and research in the areas of Biotechnology.

Institute Overview & Vision

Amity University Madhya Pradesh is established by the Ritnand Balved Education Foundation (RBEF), New Delhi to promote professional, industry-oriented education in the state of Madhya Pradesh. Amity University Gwalior, located on 100 acres of land opposite Gwalior Airport, imparts modern, practical and research-based courses which will lead to the development of manpower which is employable and ready for industry. The Amity Institute of Biotechnology in AUMP was established in 2011. The main focus of AIB is to promote high quality research and develop technically skilled human resources in the area of Biotechnology. Our vision is to achieve excellence at the National/International level in research and manpower development in the field of Biotechnology. Development of cutting-edge technologies, imparting high quality education and conducting research in forefront areas are the main features of the Institute. The Institute faculties have also been contributing to high quality research in the front line areas of Biotechnology in the form of publications and patents. The department organizes the regular visit of eminent Professors & Scientists of National and International repute from Institutes/University in India and abroad. Due to this excellent quality of teaching and research program, the Department will be able to generate excellent human resources

in Biotechnology. Department aims to nurture the potential of all the students. The department is well equipped with modern and sophisticated instruments. They make the students competent not only for achieving good records in their degree but also to qualify for national competitive examinations like NET for JRF/Lectureship.

Programmes offered by Amity Institute of Biotechnology

B.Tech. Biotechnology

B.Sc. (Hons) Biotechnology

B.Sc-M.Sc. Dual Degree

M.Sc. Biotechnology

M.Tech. Biotechnology

Doctoral Programmes

Research Activities

Research Publications> 130 (In Peer-Reviewed Reputed Journals)

Funded Research Projects: 03 (Ongoing & Comp;eted)

Patents Published: 03

Patents Filed: 05

Lab Manuals: 04

Books: 02

Ph.D. Awarded: 05

Ph.D. Scholars: Currently 07 Research scholars are pursuing PhD in AIB.

Conferences, Workshops and Lectures

(A) National Conference on Recent Advances in Biotechnology and Nanobiotechnology (BIONANO-2013) at Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior from October 29-30, 2013.

(B) Workshop: DBT and MPCST sponsored National Workshop cum Hand-on-Training on "Latest Techniques in Molecular Biology, Genetic Engineering and Computational Biology"

Amity Institute of Biotechnology, Amity University Madhya Pradesh Gwalior has organized a five days National Workshop from 13th October 2014 to 17th October 2014.

(C) DBT sponsored Popular Lecture Series: Amity Institute of Biotechnology, Amity University, Gwalior organised the three days lecture of Popular Lecture Series, sponsored by DBT, New Delhi on 23rd Sep, 30th Sep and 1st Oct 2014.

(D) DBT sponsored Popular Lecture Series: Amity Institute of Biotechnology, Amity University, Gwalior organised the three days lecture of Popular Lecture Series, sponsored by DBT, New Delhi on 3-5 Nov. 2015

(E) International Conference on Recent Advances in Biotechnology and Nanobiotechnology (Int-BIONANO-2016) at Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior from February 10-12, 2016.

(F) Popular Lecture Series organized by Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior (M.P.) on 7-9 September, 2016.

(G) Workshop: National Workshop cum Hand-on-Training on Latest Techniques in Molecular Biology, Medical Biotechnology, Bioinformatics and Industrial Microbiology, organized by Amity Institute of Biotechnology, Amity University Madhya Pradesh Gwalior on 12-18 October, 2016.

(H) National Seminar on Current Trends in Life Sciences: Amity Institute of Biotechnology, Amity University Madhya Pradesh Gwalior on 10 November, 2017.

(I) International Congress on Environmental Research (ICER-18): Amity Institute of Biotechnology, Amity University Madhya Pradesh Gwalior on 10-12 February, 2018.

(J) 2nd National Workshop Cum Hands-on-Training on Advance Techniques in Molecular Biology, Medical Biotechnology, Industrial Microbiology and Bioinformatics: Amity Institute of Biotechnology, Amity University Madhya Pradesh Gwalior on October 10-16, 2018.

(K) 2nd National Seminar on Current Trends in Life Sciences: Amity Institute of Biotechnology, Amity University Madhya Pradesh Gwalior on 27 February, 2019.

(L) 2ND National Conference on Recent Advances in Biotechnology and Nanobiotechnology (BIONANO-2020) at Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior from February 25, 2020.

Infrastructure:

Amity Institute of Biotechnology has fully equipped, centralized air conditioner Class rooms with wi-fi connection and audio visuals facility. The Institute has established well equipped Laboratories for different streams like Microbiology, Molecular Biology, Immunology, Biochemistry, Plant tissue culture, Animal cell culture, Bioprocess Technology, Bioinformatics etc. We have all basic and advanced instruments related to all programme offered by Institute.

Faculty Members of AIB, AUMP

Prof. (Dr.) Rajesh Singh Tomar, **M.Sc., M.Phil., Ph.D**. is the Head/Director of Amity Institute of Biotechnology, Dean (Life Sciences) & Dean (Academics), Amity University Madhya Pradesh, Gwalior. He has been Founder Campus Head of Amity Gwalior. Prof. Tomar has 29 years of teaching and research experience in varied disciplines of life sciences. Prof. Tomar is actively engaged in research and innovation. His research interest includes Environmental Biotechnology and Nanobiotechnology. He has supervised seven Ph.D. scholars for award of Ph.D degree and currently eight scholars are pursuing their Ph.D under his supervision. Presently, he is the PI of a research project funded by Madhya Pradesh Council of Science and Technology, Bhopal. He has to his credit more than 120 research papers published in National and International Journals. He has also published 05 books at national and international levels. He has also authored sixteen book chapters published by national and international publishers. He has published three and filed eight Indian patents. He has also published and delivered lecture in more than 45 National and International Seminars, Symposia, Conferences and Workshops. He is Fellow of CBEES, ICER and SLSc. He is member of various International and National Scientific bodies and Reviewer and Editor of National/International Journals.

Dr. Vikas Shrivastava, PhD is presently working as Professor & coordinator in Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior. He has obtained Master's degree in Applied Biochemistry from Cancer Hospital & Research Institute, Jiwaji University and PhD in Biochemistry from Cancer Hospital & Research Institute, Jiwaji University. He has 18 years of teaching & research experience. He has published more than 45 research papers in various journals of International and National repute. He has filed 02 patents out of which one is published. He has presented papers in various national/ International Conferences and received various awards. He has written two laboratory manual for biotechnology students. He has also organized various International & National scientific events. Presently heis involved in the designing and synthesis of multifunctional nanomaterials by chemical & biological route & its application in clinical & non-clinical studies. He is also member of various International and National Scientific bodies. He is running a MPCST Bhopal sponsored project in the area of Biotechnology (worth 7.95 Lacs). Several Ph.D & M.Phil students are working under his guidance.

Dr. Raghvendra Kumar Mishra, Ph.D. is an Associate Professor in Amity Institute of Biotechnology, Gwalior. He did Ph.D. from DAVV, Indore under the supervision of Dr. Anil Kumar and Co-supervision of Prof.(Dr.) Sushil Kumar NIPGR, New Delhi. He has more than 19 years of teaching and research experience. Before joining Amity he served in konkuk University South Korea, as Assistant Professor and RA in SLS

JNU New Delhi. His research interest includes secondary metabolites of medicinal plants, DNA based molecular marker development and their role in crop improvement as well well as in stress management. He is co-supervisor of 02 Ph.D. Scholars and Supervidor of 01 scholar. He has published 48 research papers and 04 patents and attended national and International Seminar/Conferences. He has been awarded CSIR-SRF, CSIR Travel award, AYRCOB travel award and TARE fellowship by DST-SERB in 2019. He has also published 02 books in the form of lab manuals. He is active member of various scientific bodies.

Dr. Raghvendra Saxena, Ph.D. an Associate Professor in Amity institute of Biotechnology. He has obtained his Ph.D. in Biotechnology from Bundelkhand University, Jhansi and worked at ICAR-IGFRI, Jhansi. He has more than 19 years research & teaching experience. He has published 24 research papers in national and International journals of repute. He has attended many national and international seminar and conferences. His area of specialization is plant molecular biology especially Genetic transformation and abiotic stress biology for crop improvement. He was awarded fellowship of CSIR (NET) for JRF and SRF in Life Sciences by CSIR. He has also awarded eligibility for lectureship NET (Botany) by MPSLET. Awarded NET in Plant Biotechnology by ASRB, (ICAR) and qualified GATE-2000 in life sciences.

Dr. Neha Sharma, Ph.D. presently working as Assistant Professor in Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior. She has more than 10 years' experience of teaching and research. She has participated in more than 40 National/International conferences/seminars. She is actively engaged in research activities and members of reputed scientific societies. She has published 22 research papers and 06 book chapters in many National and International journal of repute. She has published 1 book as editor. The broad areas of her interest are Microbiology and Biotechnology. She got "Young Scientist Award 2018" and "Junior Scientist of the year 2015" by different scientific bodies.

Dr. Anurag Jyoti, **Ph.D.** is an Assistant Professor in Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior. He has obtained Master's degree in Biotechnology from IIT Roorkee in 2006 and PhD in Biotechnology from CSIR-IITR, Lucknow in 2012. He has qualified joint CSIR-UGC JRF-NET in the year 2005. He has nine years of teaching and research experience and having 45 research papers and book chapters to his credit. He has co-supervised one Ph.D. scholar for award of Ph.D. Presently, he is the PI of a research project funded by MPCST, Bhopal. He has also published 02 books and 01 is in press. He has presented papers in various National and International Conferences. His research interest includes Environmental Microbiology and Nanobiotechnology. Dr. Anurag has won Young Scientist Award of Madhya Pradesh Council of Science and Technology, Bhopal in 2013. He is in the editorial board and reviewer of reputed journals and has life membership of

various International and National Scientific bodies. He is in the editorial board and reviewer of reputed journals and has life memberships of various International and National Scientific bodies.

Dr. Manish Kumar, PhD Microbiology (RDVV, Jabalpur) has done M.Sc. from BHU, Varanasi and B.Sc. from Allahabad Agricultural Institute, Deemed University and has qualified ICAR-NET. He worked as ICAR-SRF and RA at ICAR-NBAIM. He has more than eleven years of research cum teaching experience in different national research institutes including ICAR-NBAIM and CSIR-NBRI as Senior research fellow and Research Associate in different projects. He has more than 38 research articles in journals of national and international repute along with 1 patent published. He has expertise in the field of Microbial ecology, Genomics and Metagenomics. He is life member of Association of Microbiologists of India, Indian Science Congress and Microbiologist Society, India (MSI). He has presented papers in two International conferences in Germany, Soil metagenomics-2010 and MiCOM-2011.

Dr. Pallavi Singh Chauhan, **PhD** a postgraduate in Biotechnology was awarded her doctoral degree in 2018 from Amity University Madhya Pradesh, Gwalior, India. She is presently working as an Assistant Professor, in Amity University Madhya Pradesh, Gwalior, India. Her research focuses on the synthesis, characterization and multiple biomedical applications of nanoparticles. The major fields of science that are relevant to Dr. Pallavi Singh Chauhan work include nanotechnology, nano-bioscience, biomedical applications of nanotechnology, nanotoxicity, magnetic nanostructures, nanocatalysts, and nanoparticle systems of metals and metal oxides. She has attended and presented her work in various international conferences. She has several papers to her credit in journals of national and international repute. She has the credit of being a reviewer in various national and international journals.

Dr. Asha Singh, M.Phil., Ph.D. Presently working as Assistant Professor in Amity Institute of Biotechnology, Amity University Madhya Pradesh, Gwalior. She has four years teaching experience and more than five years research experience. She has worked as Junior Research Fellow in UGC-SAP Research Fellowship in science for meritorious students (25- 1/2014-15/ (BSR)/7-97/2007(BSR) 25 Aug 2015). She has participated in more than twenty National / International Conferences to present her research work. She has awarded Young scientist, Young investigator and Best Paper presentation award in various international conferences. She is actively engaged in research activities and member of repute scientific society. She has published ten research papers, and a book in national and international repute journals. She has recently filed a patent. The broad areas of her interest are Toxicology and Pharmacology, her research areas are Nano biotechnology as combating strategies against hepatotoxicity.

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