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Enhanced Plastic Degradation Potential Of Novel Microbial Consortia Of Enterobacter Spp. And Pantoea Spp. Screened From Various Plastic Garbage Processing Areas in Bangalore City

The present study focused to formulate novel bacterial consortia isolated from plastic garbage processing areas in urban and rural Bangalore and thereby devise an eco-friendly approach for the plastic waste management. The plastic degrading bacteria were screened and percentage of degradation was monitored by standard methods. The best isolates were formulated as microbial consortia and degradation efficiency was compared with known isolates. The degradation end products were characterized by FTIR, GC-FID, tensile strength and SEM analysis. The bacterial consortia were characterized by 16S rDNA sequencing. The probable degradation pattern was hypothesized by bioinformatics approaches. The current study demonstrated that isolates were able to grow in carbon and nitrogen deficient medium in presence of plastics polymers and the formulated consortia demonstrated 75-80% and 35-40% weight reduction in plastic strips and pellets respectively over a period of 120 days. These isolates showed enhanced degradation towards plastic materials than the isolates reported previously ($p<0.05$). The characterization of degradation products showed major structural variation in plastic strips and formation of bacterial biofilm. The best isolates formulated as consortia showed 99%, 98% and 98% identities to Enterobacter cloacae, Enterobacter ludwigii and Pantoea agglomerans respectively. The bioinformatics analysis suggested good binding properties of bacterial enzymes and plastic polymers.

POS-01

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In-Vitro Cytotoxicituy Of Microbial Extracts Against Human Cancer Cell Lines

Cancer is the largest problem in the world after AIDS. Cancer is a public health throughout the world. It is a disease of cells characterized by a shift in control mechanisms that govern cell proliferation and differentiation. Throughout medical history, plant products have been shown to be valuable sources of novel anti-cancer drugs. I have work on the Saraca asoca plant. I have use column chromatography to get the plant extracts. The Indian traditional system of medicine, which dates back many centuries, uses many centuries, uses many herbal extract to cure a variety of diseases including cancer. For primary screening, cell lines representing different types of human cancer and tissues are used. The cell lines are selected in such a way that all the cell lines growth medium (RPMI and MEM) in tissue culture plates and the mass doubling time is such that enough cells are obtained for screening. It is best to use these cell lines although others can be used.

Determination of cytotoxicity:

In a single 96 well plate, the cytotoxicity of sample can be determined on 2 cell lines at a time. The number of plates depends on the number of test samples.

I have used some Human Cancer lines namely PC-3 (Prostrate), SW-620 (Colon), Hep-2 (Liver).

SOURCES OF CELL LINES:-

l National Center for Cell Science, Ganeshkhind, Pune- 4111007(India).

l National Cancer Institute, Biological Testing Branch DTP/DCTD/NCI, Fredrick Cancer Research and Development Center, Fairview Center, Suite 205, 1003 West 7th Street, Fredrick, MD 21701-8527(USA).

Preparation of cell suspension for the assay:

The desired human cancer cell line is grown in tissue culture flasks at 37 degree Celsius, in an atmosphere of 5% Carbon dioxide and 90% relative humidity in complete growth medium to obtain enough number of cells. Select the flask with sub-confluent stage of growth. Harvest the cells by treating the cells with trypsin-EDTA.Count the number of cells/ml of suspension with help of hemocytometer.Adjust the cell density to 10,000 cells/100 micro liter in the cell suspension. Add 100 micro liter of cell suspension to each well of 96 well plates with the help of hand-set. Incubate the plates at 37 degree Celsius, in an atmosphere of 5% Carbon dioxide and 90% relative humidity for 24 hours. After 24 hours the 100micro liter of working solution of each test material is added to the wells of 96 well plates.

Sulforhodamine B (SRB) assay:

The assay is carried out as using SRB dye. The plates are taken out from the incubator after 48 hours of adding test samples. Gently add 50 micro liters of chilled 50% TCA to each well of the plate, making final conc. of 10%. Incubate the plates at 4 degree Celsius for one hour to fix the cells attached to bottom of the wells. Wash the plate with distilled water 5-6 times. Plates are air-dried. Add 100 micro liter of SRB dye to each well of the plate and leave the plates at room temperature for 30 minutes. Wash the plates with 1% acetic acid after 30 minutes. Plates are again air-dried. Add 100 micro liters of Tris buffer to each well. Shake the plates gently for 10-15 minutes on a mechanical shaker. Record the optical density with ELISA reader at 540 nm wavelength and maintain the data.

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Phloroglucinol A Neuroprotective Nutraceutical for Diabetic Neuropathy: In Silico, In Vitro and In Vivo Studies.

Prolong hyperglycemia enhanced free-radical formation and defects in antioxidant defense is implicated in the pathogenesis of diabetic neuropathy (DN). Diabetic neuropathy signifies a major health problem, as it is responsible for substantial morbidity, augmented mortality, and impaired quality of life. Current medications to treat DN include anticonvulsants, tricyclic antidepressants and opioids like analgesics which are only symptomatic with side effects. Phloroglucinol (1,3,5-trihydroxy benzene) is a naturally occurring secondary plant metabolite found as a monomer of phlorotannins in brown algae. Recent studies have shown that phloroglucinol exerts a vast array of pharmacological activities including free radical scavenging activity. Therefore the present study was design to evaluate the neuroprotective effect of phloroglucinol in diabetic neuropathy. The neuroprotective effects was evaluated by combining in silico, in vitro and in vivo studies together. According to obtained data it is suggested that phloroglucinol holds a promise to prevent and prolong the onset of development of diabetic neuropathy. Therefore phloroglucinol has a potential to develop as a new therapeutic agent for diabetic neuropathy and could be supplied as nutrients for the early stage of diabetes.

POS-03

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Isolation of Marine Actinomycetes from Marakkanam and Screening of Activity against White Spot Syndrome Virus in Freshwater Crab

Aquaculture can provide an effective solution to the world's increasing demand for proteinacious food, but the sustained production is being hampered primarily by the outbreak of diseases. Especially crustaceans are very susceptible to Antiviral diseases. One of such marine viruses is white spot syndrome virus (WSSV) has emerged globally as one of the most prevalent wide spread and lethal for crustaceans. Therefore bioactive compounds having Antiviral activity was identified and observed for their activity. Here, the secondary metabolites were isolated from different strains of Actinomycetyes and the Antiviral activity of those compounds was observed in crabs (paratelphusa hydrodomous). The result shows two strains of Actinomycetes were found to have more antiviral activity against WSSV infected crabs. The mortality rate of the crabs treated with isolated bioactive compounds was found to be 33%. Therefore it was concluded that there was a significant decrease in mortality rate of infected crabs when treated with isolated bioactive compounds.

POS-04

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Studies on Ploidy Analysis and Chromosome Doubling In Androgenic Plants of Chilli Pepper (Capsicum Annuum L.)

After successful production of chilli pepper (Capsicum annuum L.) androgenic plants through direct embryogenesis, the ploidy levels of the plants were checked by chromosome counting, chloroplast counting and flow cytometry. The results revealed that all the techniques were successful and comparatively flow cytometry was considered to be accurate. Besides chromosome and chloroplast count techniques could be employed effectively as flow cytometry is expensive. The data obtained was 12 chromosomes and 8-10 chloroplasts in haploid plants where as 24 chromosomes and 16-20 chloroplasts in diploid plants. Plants which were haploids and which didn't undergo spontaneous doubling were treated with colchicines and were tested for doubling.

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Targeted Metabolomics of Bacopa Monniera L. For Upregulation of Bacosides

Bacopa monniera L. (Scrophulariaceae), commonly known as Brahmi, an important source of metabolites of pharmaceutical value like bacosides and bacosaponins along with alkaloids brahmin and herpestin which are known for the improvement of intelligence, memory and renewal of sensory organs. In this research metabolomic profiling work was carried out on Bacopa monnieri by using Liquid chromatography High resolution mass spectrometry (LCHRMS/MS). Experiments were carried out in triplicates on leaf, root and stem at time interval of 0hr, 12hr and 24hr after stress using Methyl jasmonate (MJ) as elicitor and a stress factor. Metabolic profile was analyzed in targeted way by using MAVEN open source software program. Quantification of all known metabolites was done on the basis of their fold change with respect to standards. Metabolite analysis was done by analyzing metabolite levels in plant pathways like Terpenoid backbone synthesis, Sesquiterpenoid and triterpenoid biosynthesis, Diterpenoid and monoterpenoid pathway respectively. Bacopaside I -VII, N1, Bacosine, Bacoside (A1 andA3) and jujobogenin were successfully detected and their levels were examined at 12hr and 24hr respectively. Thus MJ treated plants successfully showed 5-10 fold increased level of bacoside and bacosaponins.

Key words:
Bacopa monniera, Metabolomics, Bacosine, Bacoside, bacosaponins, jujobogenin

POS-06

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In-silico Screening and Lead Identification against HPV 16 in Oral Cancer

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Oropharyngeal cancers are growing threat on humans worldwide. Recently, the instances of these cancers were detected to be due to invasive action of Human Papillomavirus Strain16. These viruses were known to cause cervical cancers and are communicable, but recent studies revealed that the viral proteins could break cell-cycle check points of tumor-supressor genes, p53 and Rb, causing oral cancers. But the way how HPV causes oral cancer and the mode of transmission is yet unclear. Flavonoids extracted from Givotia rottleriformis were reported to show anti-proliferative and anti-parasitic activities.The current study includes lead identification against HPV proteins amongst various reported flavonoids from G.rottleriformis and two novel X-ray refined small molecules. Ligand conformers were generated and filtered against Lipinski's rule and ADMET properties. The filtered compounds were docked against viral as well as tumor suppressor proteins in order to find any dual inhibitory activity. LT (-16.8124) and Mol 2 (-13.8407) showed good activity with p53 with respect to the chemotherapy drug Carboplatin (-22.5887) whereas with pRb, GA (-15.5530) proved to be a potent inhibitor as compared to Mol 1 (-13.0703) and the drug, Olaparib (-16.9481). Thus, docking scores and RMSD values hint that lead compounds being more potent inhibitors than standards.

Keywords:
Oropharyngeal, Human Papillomavirus, Anti-proiferative, Flavanoids, ADMET

POS-07

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De Novo Transcriptome Assembly of Rauwolfia Serpentine Reveals Novel Transcript Related To Alkaloid Biosynthesis and Gene Discovery

Rauwolfia serpentine known as 'Sarpagandha' in Sanskrit, is an flowering plant in the family of Apocynaceae. Recent studies has already shown the presence of alkaloids in R.serpentine that have medicinal properties. Current study focus on transcriptomic analysis of R.serpentine, because there are not sufficient Transcriptomic and genomic data in public databases. The raw Transcriptomic data of R.serpentine were downloaded from NCBI SRA database of Accession number SRA045782 and quality were checked using FastQC tool. The raw data were trimmed using RNA-Rocket in Galaxy server. The total number of bases before and after trimming was 49,38,52,836 and 49,02,19,109 respectively. The trimmed reads were assembled using Seven Bridge Genomics Trinity and Velvet oases. The total trinity transcripts of 127035 and 97172 trinity genes with average length of 974.75 and N50 of 1822. The GC content was calculated to be around 39.89%. CD-HIT tool were used for clustering the Genes and Isoforms. The transcripts were extracted and used as queries in BlastX against the Ref-Seq protein database. Blast2GO tool was used for functional annotation of the obtained transcript sequences. SSR identification and biosynthesis pathway were done using MISA tool and KASS server to elucidate the genes involved in mono-terpenoid biosynthesis. The transcripts are generated here provides a resources for gene discovery and development of functional molecular markers.

Keywords:
Rauwolfia serpentine, Transcriptomic, Alkaloid biosynthesis, Trinity assembler.

POS-08

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Design, Screening, Synthesis and Evaluation of Peptidomimetics Using In-silico And In-vitro Approach

Peptidomimetics are compounds that mimic natural peptide or protein which possess the ability to interact proposed biological targets to elicit similar biological activity. Caffeic acid, the phenolic and acrylic natured compound selected for modification as it shows anti-inflammatory, antioxidant, and anti-hyperglycemic properties. Caffeic acid structures were designed with Mono peptide and Di-peptides using Chem-draw ultra. These structures were filtered against Lipinski Rule and ADMET properties. Cyclooxygenase1 (COX1), Cyclooxygenase2 (COX2) and Lectin-type oxidized LDL receptor1 (LOX1) proteins were selected as target proteins to check anti-inflammatory activity and two organisms namely, Escherichia coli and Staphylococcus aureus to check the antimicrobial activity. Docking and Standard dynamics of designed modified caffeic acid structures were done using Lead IT FlexX and Discovery Studio 3.5 respectively. The best screened compounds are SIT1, SIT2, SIT3 and docking scores -18.59,-7.87 and -21.69 respectively were synthesized in Solution phase and purified using Column Chromatography. Synthesized Compounds were tested for in-vitro methods, Antibacterial activity using Diffusion techniques and Antioxidant activity using DPPH method which showed a good result. Therefore, it can be concluded that the obtained compounds could behave as potential anti-inflammatory as well as antibacterial agents.

Keywords:
Caffeic acid, Peptidomimetics, Solution phase, Di-peptides.

POS-09

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Whole Genome Sequencing and Gene Annotation of Almond (prunus Dulcis) and Sweet Cherry (prunus Avium) Genomes

Prunus dulcis (Almond) and Prunus avium (Cherry) are small deciduous trees belonging to the Rosaceae family. Our study focuses on presenting the draft genome of P. dulcis and P.avium along with SNP identification. The raw data, paired end sequence libraries generated using Illumina Genome Analyzer I and II (Bioproject accession SRP020000). The quality of the reads was checked for low quality bases, adapters and unwanted nucleotides. All the low quality reads were trimmed off thus giving better reads. A total of +12.19 Gbp (P. dulcis) and 1.5 Gbp (P.avium) trimmed data was subjected to De Novo assembly using DDBJ pipeline and velvet for linux for various K-mer values. The optimum K-mer value for P.dulcis was found to be 39 with the total number of contigs and optimum N50 value as 541874 and 1235 respectively. In case of P.avium, the optimum k-mer value was 29 with the total number of contigs and optimum N50 value as 80308 and 369 respectively. The assembled sequence was compared with reference genome (Prunus mume for P. dulcis and Solanum pennellii for P. avium) for gene prediction and analysis along with SNP detection. Hereby, the draft genome of P. dulcis and P. avium was completed along with significant SNPs identification. The P. dulcis and P.avium genome is expected to provide information on Rosaceae evolution and can provide important data for the improvement of fruit trees with much more nutritional value.

Keywords:
k-mer value, velvet, contigs, Prunus avium, Prunus dulcis.

POS-10

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Anti Hypercholestromic Activities of Biologically Enriched Garlic and Flax Seed Extracts

The physiological importance of magnesium unassailable and proven by its cholesterol lowering properties of magnesium as it acts as a cofactor for the enzyme HMG- Co A reductase involved in the rate limiting step of the cholesterol synthesis. Magnesium is also important for the activity of Lecithin Cholesterol acetyl transferase which lowers LDL-C, Triglycerides and increases HDL-C levels in blood. Cholesterol Esterase and Lipases are enzymes that help in breakdown of cholesterol rather regulation of the cholesterol levels in body and maintain a healthy level of free fatty acids, LDLs and TGs. Flax seeds are rich in omega-3 fatty acids and Garlic have phytocompounds Allin and Allicin that has a mention in traditional medicine and nutraceutical world. In the present study both Garlic and Flax seeds were subjected post harvest biological enhancement of magnesium by the methods described in (US App.No. – 13/805079, US 2013/0139282, 2316/CHE/2010). The levels of magnesium increased to several folds than control and the complete natural method of enhancement indicated its organic nature. The increased levels of Magnesium was confirmed by atomic absorption spectrophotometry. Magnesium rich Garlic and Flax were extracted. Aqueous, methanol and chloroform extracts were tested for their inhibiting activities on enzymes cholesterol esterase and lipases. Positive results were obtained in both the cases and has significant nutraceutical benefits.

POS-11

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In Vitro Callus Induction And Multiple Shoot Regeneration Of Solanum Virginianu. L.

The present work is on tissue culture of Solanum virginianum L. It is medicinally important as it is used in the treatment of bronchial asthema, digestive disorders, piles, inflammation of ears etc. Plant source were collected from Sirsi region of Western ghat. Auxillary bud and leaves were used as explants. An efficient protocol was developed for callus initiation and multiple shoot initiation. MS media was used with various combinations and concentrations of BAP (0 to 2.0 mg/l), keeping NAA (0.5 mg/l) constant for auxillary bud explants. For leaves various combination of NAA (0 to 3 mg/l) keeping BAP (0.2 mg/l) constant. The maximum number of shoots (8) and shoot length (6 cm) were obtained from combination of 1.5 mg/l BAP, and 0.5 mg/l NAA with 80% survival. The combination of 2 mg/l NAA mg/l and BAP 0.2 mg/l showed maximum callus mass with 50% survival.

POS-12

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Optimization of an Instant Anti-Diabetic Health Drink Supplemented with Natural Non Calorific Sweetener

Sedentary lifestyle and intake of high calorie food are major risk factors for obesity which contribute to insulin resistance and type 2 diabetes. The traditional and complementary medicine though have innumerable solutions, they are not practiced because of either tedious preparation methods or unacceptable taste. The present study was undertaken to formulate and standardise an instant health drink powder with anti-diabetic properties. Formulation of ready to use instant anti diabetic health drink supplemented with stevioside a nautral sweetener with very low calorific value is performed successfully. The ingredients used to formulate the ready to drink mix are aqueous extracts of banaba (Lagerstroemia speciosa L.), green tea (Camellia sinensis) and Stevia (Stevia rebaudiana). The combination plant extracts at various concentrations were standardised based on their organoleptic properties and percentage of active principle. The calorific value of various sweeteners viz., sucralose, levulose, aspartame, stevia extract, sugar, jaggerry and palm sugar were calculated and compared. The alpha amylase and beta-galactosidase assays were performed in vitro individually and in combination of all the extracts and sweeteners. Stevia extract not only acts as a sweetener, but also has potent antidiabetic activity. Nutrional profiling, chemical profiling and proximate analysis indicate the projected antidabetic benefits. Sensory evaluation on hedonic scale is satisfactory and demonstrates the acceptability of the product

POS-13

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A Holistic Nutraceutical Solution for Iron and Zinc Malnutrition

Nutrition is the science that interprets the interaction of nutrients and other substances in food in relation to maintenance, growth, reproduction, health and diseases. Nutritional deficiencies are therefore very significant to the overall health of infants and children because growth and development can be seriously hindered by shortages in essential nutrients. Malnutrition is often used specifically to refer to under nutrition where there is not enough calories, protein, or micronutrients. If under nutrition occurs during pregnancy, or before two years of age, it may result in permanent problems with physical and mental development. According to the data available from the National Family Health Survey (NFHS) III in 2005-06, 79% of the children in India were found to be anemic. On an average 49% of children in India are suffering from zinc deficiency. In the present study a holistic method is developed for biofortification of millets with Iron and Zinc. The current trend of fortification is supplementation with inorganic source of Iron to wheat flour or food. The supplementations available in the market is currently done by simple addition which will hinder the bioavailability and absorption. The metallic taste of supplements will discourage children consuming the same. In the present study a novel method is used to increase the organic iron, Zinc and flavanoids of Ragi, Bajra, Zowar and wheat. Millets were sprouted by using a formulated solution (US App.No. – 13/805079, US 2013/0139282, 2316/CHE/2010, 2314/CHE/2013) consisting of absorbable sources of Iron, Zinc, elicitor, grape seed extract and other growth supporting nutrients. Millets during the process of sprouting metabolize Iron and Zinc and fixes them in organic form. Due to the presence of elicitor in the formulated solution the flavanoid content is doubled. There is ten fold increase in Iron and Zinc content in the millets sprouted in the formulated solution and is confirmed by atomic absorption spectrophotometry. Phytochemical profiling and nutritional profiling of these enriched sprouts indicated their enhancement in nutrional and nutraceutical value. Physical properties such as weight, moisture content, total ash, bulk density and texture were also determined. Organoleptic properties were also determined and these miracle millets can be used to prepare malts, flakes, biscuits and will have high bioavailability , acceptability and bioequivalence when compared to other artificially fortified foods. This breakthrough study has a dual benefit of naturally enhanced contents of minerals and phyto constituents and can answer many malnutrition problems around the globe.

POS-14

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Fermented Coconut Water – A Potent Wound Healer with Skin Cell Proliferative Activity

Tender coconut water is rich in nutrients, minerals and vitamins with tremendous nutraceutical properties. Fermented coconut water popularly known as kefir. During fermentation, beneficial bacteria and yeast transform the natural sugars found in coconut water into powerful metabolites that benefit the human body. In the present study a successful attempt has been made to use this fermented coconut water for wound healing purpose. Wound healing can be defined as a complex dynamic process that results in the restoration of anatomic continuity and function. Wound healing process require minerals, nutrients and vitamins. Apart from this the immunity of the cells need to get boosted and avoid pathogenic bacteria to invade and infect the damaged cells. The hypothesis triggered this piece of research is the comparison of coconut water composition with animal cell culture media. Interestingly all the complex nutrients required for skin cell culture media are present in the coconut water and the antioxidant properties further increased with fermentation. The probiotic metabolites in coconut kefir exhibit antimicrobial activity against pathogens and is well documented. With this background, cococut kefir is made by controlled fermentation using Lactobacillus strains in the present study. This kefir is tested on animal skin cell lines and found to have cell proliferative activity. Using the kefir as a base a wound healing gel is prepared. The antioxidant properties were studied and usage of this kefir for wound healing purpose is first of its kind and has faster wound healing ability. Rosemary extract fortified with zinc by employing a unique method (2313/CHE/2013) is used as a natural preservative in the gel which is considered to have multiple benefits of skin softening, whitening and antioxidant properties. The particular study opens up an avenue for the wound healing formulations in military and air force.

POS-15

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Pastrient – A Gluten Free Pasta with Added Nutraceutical Benefits

Pasta is a traditional Italian cuisine commonly made from unleavened dough of refined wheat flour mixed with water or eggs and formed into sheets or various shapes, and cooked by boiling or baking. It is traditionally manufactured by hand or extruders on commercial scale. The original traditional food is now a popular ready to cook or eat food and attracts both children and adults. However the goodness of this food is not accepted by many due to its gluten content. The present study was undertaken to optimize method of preparing a gluten free nutraceutical pasta along with ready to mix nutraceutical sauce. Refined wheat flour is replaced with maize flour, soya, bengal gram, butter milk to increase its fibre content and also oats were added to it to make it gluten free. This multigrain pasta was further incorporated with spinach which increased its iron and calcium content. A method and composition was optimized to prepare ready to use sauce with rosemary extract and medicinal herbs such as oregano and parsley. The proximate and organoleptic constituents of fortified multigrain pasta and sauce were analyzed and fortified products were found to be more nutritious than the control. The sensory evaluation based on hedonic scale resulted in high sensory ratings of the products for the selected attributes evaluated.

POS-16

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A Novel Method of Selenium Biofortification in Fenugreek and Rosemary and their Utilization as Antidandruff Nutra- Cosmoceutical Formulation

Selenium is a powerful biologically important micronutrient constituting the active centre for more than 20 proteins and has been appreciated in nutrition and therapeutics for the last few decades. Seleno amino acids, seleno cysteine and seleno methionine along with zinc are prescribed to treat many hair problems such as gray hair, hair loss and dandruff. Selenium can be considered as nutra - cosmoceutical which not only boosts hair growth but also kills dandruff causing malassezia furfur from the scalp. Hence selenium is used in many anti-dandruff shampoos. However the inorganic selenium sulfide, a common source of selenium shampoos is reported to have systemic toxicity by American society of health system pharmacists, AHFS drug information (2010). Selenium sulfide lotions should not be applied to damaged skin, open lesions or places with acute inflammation or exudation of the scalp. Selenium from food source is a wonderful nutraceutical, where as inorganic forms of selenium used in topical applications in hair lotions need to be used with caution. Hence a novel solution is derived in the present investigation by biofortifying fenugreek (Trigonella foenum) and rosemary (Rosmarinus officinalis) by employing a unique method (US App.No. – 13/805079, US 2013/0139282, 2313/CHE/2010). Fenugreek and rosemary are grown in the formulated solution comprising selenium, natural preservative, nutrients to support growth and metabolism of fenugreek and rosemary under completely controlled conditions. Both medicinal, antidandruff and hair growth promoting herbs metabolized inorganic selenium and accumulated in the form of organic selenium. The extracts of modified fenugreek and rosemary has multiplied benefits of the phyto constituents and also non-toxic organic selenium compounds. These extracts were tested against the dandruff causing organism and found to be very effective in inhibiting the growth. A chemical free natural hair gel is formulated with the biofortified extracts of rosemary and fenugreek. Physico-chemical characteristics of gel such as solubility, ash values, swelling index, loss on drying and pH were studied. All the formulations were evaluated for toxicity, homogeneity, spreadability, viscosity, active principle content. The gels prepared were found to be novel and has considerable nutra cosemetic utility.

POS-17

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Nutraceutical Red Wine Preparation with Garcinia Cambogia - A Potent Antiobese Plant

Hydroxycitric acid (HCA), an active phytochemical of Garcinia cambogia, is a known competitive inhibitor of ATP-citrate-lyase, presenting a potential inhibition of fatty acid biosynthesis and effectively used as against obesity. In the present study a protocol is optimized to ferment Garcinia fruits individually and in combination with blue grapes. The content of Hydroxy citric acid in the nutraceutical wine is quantified by HPLC method. Antioxidant property of nutraceutical wine is studied by DPPH method. Phytochemical profiling, nutritional profiling, alcohol content, total sugars, total flavanoids were estimated in the nutraceutical wine by employing standard procedures. The wine prepared from Garcinia cambogia fruit is exhibiting significant antioxidant properties and is rich in Hydroxy citric acid. The nutraceutical benefits of Garcinia cambogia wine is established in the present study

POS-18

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Development Of Methods To Reduce Sodium Salt Intake To Ameliorate Hypertension

India ranks 37th in terms of coronary disease which amounts to 13.88% of the total deaths, the primary cause is being hypertension. Hypertension or high blood pressure is defined as a repeatedly elevated pressure on the arterial walls. Hypertension ranks 7th in India which results in many adverse disorders including arthrosclerosis, eventually leading to strokes. In India, over 35% of the urban population suffers from high blood pressure, major cause being high intake of salt which mainly come from processed foods. Sodium plays a vital role in the human body as it maintains the correct balance of body fluids. However too much of salt can lead to various disorders including hypertension, osteoporosis, asthma, stomach cancer and weight gain. Thus, it becomes essential to minimize the consumption of sodium from our daily diet and consider for alternatives or sodium replacers. Potassium chloride (KCl) is one of the major sodium replacers permitted by FDA since it has similar physical and chemical properties as that of NaCl. In addition, potassium is also known to reverse the effects of hypertension and potassium RDA is more than sodium. The project aims in designing salt replacement formulation which helps in controlling hypertension. Different combinations of KCL and NaCl up to permissible limits of KCl were blended and subjected to sensory evaluation. The best accepted blend is used to make a ready to eat snack with potato and also a nutraceutical pickle. The method of processing is optimized to use low sodium salt without altering oragnoleptic properties. Other ingredients such as ginger, fenugreek, turmeric, and red chili peppers which are known to have natural anti-hypertensive properties were also employed to increase the nutraceutical benefit of the product. Variants of pickles and spiced potato chips were prepared with optimized blend and various other hypertension lowering ingredients without altering the organoleptic properties. This study is aimed at providing an alternative to sodium salt and ameliorating the salt haemostatis.

POS-19

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Medicinal Properties of Popped Lotus Seed (Phool Makhana) and Its Utilization in the Preparation of Nutraceutical Energy Bar

Nelumbo nucifera belonging to family Nelumbonaceae is commonly known as Indian lotus, sacred lotus, bean of India. The seeds of lotus are known as Makhana, Phool Makhana, lotus seeds, Gorgon nut, Euryale Ferox. The recorded seed viability of lotus is 1,300 years and is best known to have anti aging properties. Makhana is used in traditional medicine as a astringent, antidiabetic, anticancer, aphrodisiac, anti inflammatory and a powerful anti coagulant. A thorough investigation about the nutritional and phytochemical constituents has been undertaken and utilized for the preparation of nutritional energy bar. A process for caramilization with date syrup is optimized in the current study. A perfect combination of nutritional bar is derived by combining brahmi, flax seeds, oat meal enhanced the nutrional and nutraceutical properties. The process optimization include the selection of nutra nutraceutical ingredients, caramilization, coating and roasting the Makhana. The final product is subjected to proximate analysis and is found to have high fibre, low in sodium and high in potassium and can be given as a nutraceutical bar for diabetics and hypertensive people. The sensory evaluation on hedonic scale is determined and organoleptic properties were studied. Phytochemical nutritional profiling revealed higher flavanoid contents, protein, fibre, vitamins, minerals. This low fat nutraceutical bar is well accepted during our organoleptic study and is further evaluated for moisture content, ash value, calorific value, amylase inhibitory activity and antioxidant activity. The shelf life of the product is also determined by accelerated stability studies. The makhana as such is known to be given during fasting and the product offers numerous advantageous as a nutraceutical energy bar.

POS-20

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In Vitro Propagation of Wild Orchid Dendrobium Ovatum (L.) Kraenclin

Dendrobium ovatum (L.) Kraenclin belongs to family Orchidaceae. Orchids exhibit incredible range of diversity in their size, shape & colour of their flowers. Though orchids are grown primarily as ornamentals, many are used as herbal medicines, food and other have cultural values. This genus is known for their beauty, variety of pleasing fragrances, and economic importance. An efficient protocol has been developed for mass multiplication of Dendrobium ovatum (L.) Kraenclin. Micropropagatoin of wild orchid was achieved by seed culture. The immature orchid pods were collected from nearby forest patches of Sirsi region, Western Ghats. The germination of immature seeds were achieved on half strength MS media with 1mg/l GA3 .Further the medium was supplemented with various combination of growth regulators. Naphthalene Acetic Acid (1.5 mg/l) stimulated root growth and Benzylaminopurine at 2.5mg/l induced multiple shoots. Plantlets of 6 -7 cm in length were transplanted to the greenhouse and a 75% survival rate was obtained.

POS-21

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Lignoethanol

Bioethanol can be a sustainable solution for developing countries like India, in order to fulfil the growing energy demand. In recent years, considerable progress has been achieved in biomass pretreatment, cellulase production and co-fermentation of lignocellulosic biomass into bioethanol. In this study, Aspergillus sp. was used on various lignocellulosic biomass such as wheat bran, sawdust and coffee husk for hydrolysing cellulose biomass to simple sugars. A dynamic optimization of biomass pretreatments, cellulase enzyme purification and bioethanol production by yeast Saccharomyces cerevisiae was carried out. Cellulase activity of Aspergillus sp. on the substrates were determined and among these, wheat bran was found to be the most suitable for cellulase production and break-down into reducing sugars, making it easier for yeast fermentation. Cellulolytic property was confirmed by zymogram on performing NATIVE-PAGE. Cellulase was partially purified by ammonium sulphate precipitation (80%), dialysis and ion-exchange chromatography. Lignoethanol was fermented from saccharified wheat bran using yeast. It was further distilled and subsequently quantified using chromic-acid method. The multi-disciplinary nature of the whole process necessitates the need to improve the microbial strains for efficient cellulases, enhanced rates and yields, and optimized production process by the utilization of inexpensive resources, would need persistent effort.

Key Words:
Bioethanol, Cellulase, Lignocellulose

POS-22

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Optimization of Transesterification Process and Production of Biodiesel from Castor Oil

Castor plants (Ricinus communis) grow abundantly in tropical and sub-tropical countries and survives easily in harsh weather conditions, making it suitable for production of castor oil. Biodiesel is a monoalkyl ester of long chain fatty acids derived from renewable vegetable oils and animal fats. For depleting fossil fuel resources, biodiesel is an important biorenewable, biodegradable and non toxic alternative. It has lesser detrimental effects on the environment as compared to conventional diesel. This study investigates the extraction of castor oil by various solvent (methanol, ethanol and petroleum ether) extraction methods, checking for physio-chemical parameters such as fatty acid content, Saponification value, Iodine value, Acid value, Specific gravity and pH. The extracted castor oil was used to produce biodiesel by transesterification as it is the most economical technique involving low temperatures to give a good yield. Castor oil transesterification reactions were carried out using methanol and two basic catalysts, KOH and NaOH. Maximum biodiesel yield was obtained by using NaOH. Oil to methanol ratio and the quantity of catalyst used was analysed. The esterification procedure converts castor oil to methyl esters. The methyl ester (biodiesel) was successfully separated from glycerol and analysed in HPLC. The heavier by-product of transestrification, glycerol, has application in several industries like pharmaceutical, soaps, paint, ointments and cosmetics.

Key words:
Castor oil extraction, transesterification, Biodiesel, glycerol.

POS-23

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Study on Optimization of Pigment Production by Serratia Marcescens in Various Carbon Sources

Prodigiosin is the only tripyrrylmethene available in the nature which produces a red pigment. This red pigment has been reported to have characteristics of antifungal, antiproliferative and immunosuppressive functionalities. In this study, Serratia marcescens was isolated from the midgut region of the silkworm, identified, characterized by gram staining, biochemical tests and various carbohydrate fermentation, pigment production and purification by thin layer chromatography. We also tested the growth of the bacteria on various carbon sources such as sucrose, glucose, sugarcane, glycerol, jaggery, starch, cellulose to check the maximum pigment production. Out of which jaggery, glycerol and sugarcane showed a significant increase in production of red pigment on 3-5 days incubation at room temperature. After each successive production, the pigment was extracted with methanol and acetone extraction method and RF value was calculated by performing paper chromatography. This study aims to commercialize the pigment and its function in food and cosmetic industry.

Keywords: Serratia marcescens, Pigment, Prodigiosin, tripyrrylmethene, immunosuppressive, antiproliferative

POS-24

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A Novel Biodegradable, Antioxidant Rich Chitosan Based Film for Preservation of Fruits

Post harvest preservation of fruits is a challenge in agro processing industries. Food is often covered with thin plastic films to make them last longer and to protect them against the growth of microbes. The environment is seriously affected by the use of plastic bottles and films which are non-biodegradable and also can prevent oxidation and browning especially cut fruits like apple, pear and banana. So the quest for alternative materials to plastics is an environmental priority. A material known as chitosan, made from exoskeleton of crustaceans (such as crabs and shrimp) and cell walls of fungi, has been used as an alternative in food packaging. In the present investigation a chitosan biofilm enriched with antioxidants like ascorbic acid, rosmarinic acid and curcumin are optimized. The combination of natural antioxidants are supplemented during preparation of chitosan base with acetic acid. This slurry made with chitosan, acetic acid and antioxidant mixture is used in composite film making. Areca sheath made fruit bowls were dipped and polymerized by using dilute alkali for the production of composite film. These fruit bowls can be used to store cut fruits without browning. The, antioxidant and anti-microbial nature of rosmarinic acid, ascorbic acid and curcumin preserve the fruits and increase its shelf life. Washable, biodegradable, biocompatible, non-toxic and versatile chemical and physical properties of chitosan film with natural antioxidants and preservatives is having high applicability and utility in the fruit and vegetable preservation sector.

POS-25

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Extraction, Nutritional and Functional Characterization of Protein from Jack Fruit Seeds - A Cost Effective and Nutritive Alternative for Protein Malnutrition

The United Nations Food and Agriculture Organization estimated that about 795 million people in the world, in simple words one in nine, are suffering from chronic undernourishment as per the latest statistics of 2014-2016. Among the two basic types of malnutrition/undernutrition, the first and most important is protein-energy malnutrition (PEM). To combat this various protein isolates are currently available in the market, however unaffordable by the actual sufferers. The major source of plant proteins are pulses and nuts. Commercially protein powders are prepared mainly from soybeans. In the present study a successful study has been undertaken to optimize protocol for the extraction of proteins from Jackfruit seeds. Seeds of jack fruit are available in plenty and currently an underexploited source of protein. Apart from starch Jack fruit seeds are rich source of protein and a protocol is established for extraction of the same. Biochemical, mineral composition and functional properties of jack seed flour and crude protein extracted were studied. Our findings suggest that jackfruit seed is a good source of crude protein, total carbohydrates and possesses high calorific value. This is also a rich source of essential minerals with many medicinally important phytochemicals. While optimizing extraction of protein the effect of temperature, heating time, pH, and solvent used was studied and all these parameters effect the precipitation of total protein. The physicochemical characteristics such as acid value, saponfication value, unsaponifiable matter of crude protein and flour was also determined. The data provided valuable guidelines for its utility as a source of protein in food industry. This is the first report on detailed investigation on extraction of crude protein from jackfruit seed and found to be a viable and cheaper alternative for handling protein malnutrition.

POS-26

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Comparative Study of Enzyme Serratiapeptidase Isolated From Different Races of Bombyx Mori

Serratiapeptidase (SRP) is an extracellular proteolytic enzyme found in silkworms. Silkworm produces this enzyme to digest its tough cocoon. Mechanism of action of serratiapeptidase appears to be hydrolysis of histamine, bradykinin and serotonin. To purify Serratiapeptidase, two different races were chosen and midgut region were separated by dissecting the silkworm. From this, bacteria, Serratia marcescens (confirmed by sequencing) was isolated by plating techniques in which red colonies were formed. Enzyme was purified by chromatographic techniques, enzyme activity and total protein content was calculated. SDS-PAGE and Native PAGE were performed to find the molecular weight and purity of this enzyme. Spectrophotometric analysis was done to determine the concentration of the protein by 280nm method to quantify proteins. From the comparative study of two different races of Bombyx mori, enzyme activity was more in the case of NK2. This purified Serratiapeptidase can be used to relax the muscles of airways and blood vessel obstruction thus preventing the need for by-pass operations and is a natural anti-inflammatory agent.

POS-27

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Comparative Study of the Enzyme Chitinase from Different Races of Bombyx Mori

Chitin, a ß (1,4)-linked polymer of N-acetylglucosamine is a polysaccharide found abundant in nature next to cellulose. It is also found in exoskeleton of insects, as a component in algae, fungi. Chitinase (EC 3.2.1.14) is an enzyme induced at the time of metamorphosis of the insect larvae to degrade most of the older chitin. In this study, chitinase was isolated from the integuments of different races (Bivoltine, multivoltine and Multi-hybrid) of silk worms at different stages of growth cycle (4th, 5th instar and pupa stages). Enzymes are then purified by chromatographic techniques, enzyme activity and total protein content was calculated. SDS-PAGE and Native PAGE were performed to find the molecular weight and purity of the enzyme chitinase. Spectrophotometric analysis was done to determine the concentration of the protein in the sample by 280nm method to quantify proteins. Enzyme activity and protein content was found to be maximum in multi-hybrid while it was less in bivoltine and multivoltine races. Industrial purification of chitinase provides pest control strategies thereby being used as biocontrol of plant pathogens and for developing transgenic plants. It can also be used as mosquito control.

POS-28

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Bio Hydrogen Production Using Commercially Viable Carbon Sources

Hydrogen gas production plays a very important role in the development of future fuel economy. One of the promising hydrogen gas productions is concentrated on conversion from biomass, which is abundant, clean and renewable. Organisms present in the soil were used for the production of hydrogen gas namely; Klebsiella oxytoca, Pseudomonas aeruginosa, Brevibacterium species, Bacillus subtilis and Lysinibacillus fusiformis. These organisms were cultured on various carbon sources like gluten, jaggery, sugarcane juice, corn-steep liquor and Pongemia pinnata oil for hydrogen gas production. Bio hydrogen gas production was observed by pop sound test. The strains were analysed for hydrogen gas production and some strains were found to be effective in hydrogen gas production. Klebsiella oxytoca produced hydrogen gas with all carbon sources used, where as Pseudomonas aeruginosa and Bacillus subtilis produced hydrogen gas using three carbon sources, while Lysinibacillus fusiformis produces hydrogen gas from two carbon sources and hydrogen gas production was not observed in Brevibacterium species. The fate of hydrogen biotechnology is presumed to be dictated by the stock of fossil fuel and should be concentrated in producing more in the future.

Keywords:
Hydrogen gas, renewable, pop noise test, fossil fuel.

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POS-29

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Drug Resistant GAS Infection In Children And Inhibition Of M1 Protein Activity By Drug Designing

Streptococcus pyogenes, a group-A Streptococcus (GAS) continues to be a significant public health problem worldwide causing Rheumatic heart disease (RHD). RHD has become one of the World's most widespread diseases targeting school children in the age group of 5 and 15 leading to high mortality and morbidity. The present study revealed a high rate (40.2%) of Streptococcus pyogenes incidence from Bangalore children. All the clinical isolates were susceptible to the antibiotics Penicillin G, bacitracin, cephotaxime, clindamycin, amoxycillin, ampicillin and azithromycin. However, 5.7% of isolates were resistant to the antibiotics erythromycin and ciprofloxacin. This is alarming in view of emergence of resistance against these safe drugs, which may further complicate the treatment of patients who are allergic to penicillin. Hence, the streptococcal M1 protein, probably one of the best-defined molecules of the known bacterial virulence determinants and whose structure, function, immunochemistry, and method of antigenic variation are unique among known virulence molecules, may serve as a model for certain microbial systems. Since, the antibiotics are prone to resistance it will be ideal to prevent the activity of M1 protein by designing a ligand molecule. Ligand binding to M1 protein was designed by Chemsketch tool and the M1 protein-ligand Docking studies were performed using Argus tool and binding affinity of M1 protein and the ligand were tested.

Key Words :
Group-A Streptococcus, rheumatic heart disease, antibiotic resistance, M1 protein.

Reference :

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Process Optimization of Production of Biodiesel from Rubber Seeds

The current motivation towards the production of biodiesel is the conservation of fossil fuels as well as concerns over environmental problems. Considerable attention and effort has been given in producing alternative renewable energy like biodiesel which is also known as Fatty Acid Methyl Ester (FAME). Besides that, biodiesel possesses all the favorable characteristics of diesel and is renewable, biodegradable and non toxic. The second generation seeds such as rubber seeds can be used for the production of biodiesel. Effective extraction of the oil is done with soxhlet extractor and properties of oil thus obtained are analyzed. Esterification with acid catalyst is done to reduce the free fatty acids in the oil. Trans-esterification with base catalyst leads to the production of FAME. This study mainly focuses on the optimization of concentration of catalyst, reactants, reaction time to obtain maximum yield of biodiesel. The properties of obtained biodiesel are compared with that of ASTM Standards. Fuel from rubber seed oil will surely prove to be a promising alternative to solve the emerging energy crisis.

Keywords:
Biodiesel, FAME ,Soxhlet extractor,Transesterification

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Isolation of Biosurfactant Producing Bacteria from Waste Oil Sludge and Its Application in Oil Bioremediation

Used oil from locomotives, ships, vehicles can pollute both soil and water ecosystems posing a global threat. Since 2010, large oil spills have been greater than 700 tonnes per year .Oil pollution causes devastating damage to the environment during accidental discharge of used oil. There are wide range of microorganisms in environment which utilize hydrocarbon waste as sole carbon source, thereby degrading/converting them into useful byproducts. Also these microorganisms produce biosurfactants which reduce surface tension at oil water interface, breaking down oil to smaller droplets, facilitating oil remediation. In the present study, microorganisms were isolated from castor oil waste sludge and tested for oil degrading ability on used engine oil for a specific period of time. The microorganisms were identified by basic biochemical tests and total hydrocarbon degraded was determined by the toluene cold extraction method. The percentage hydrocarbon degradation was calculated comparing initial contaminated oil with oil after bioremediation by Gas chromatography (GC). The bioremediation pattern was analyzed by studying exopolysaccharides and biosurfactant involved. The results of this investigation can be enhanced to commercially produce biosurfactant for oil bioremediation and other environmental applications.

Key words:
Bioremediation, Total hydrocarbon content, Exopolysaccharide and Biosurfactant.

POS-32

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Production of Bio-plastics By Soil Bacteria Using Molasses as Substrate

Synthetic plastics are one of the greatest inventions of mankind and have been developed into a major industry and indispensable commodity in human life. As the natural environment is continuously polluted by these hazardous plastics, the development and production of environmentally conserved biodegradable plastics are rapidly expanding in order to trim down reliance on synthetic plastics. Unlike synthetic plastics PHB's are produced from renewable sources and is degraded aerobically by microorganisms. The present work deals on producing PHB's using molasses as a substrate and a soil bacterium (Identified as Bacillus subtilis). The cultures were kept in a cell stirrer for 3-4 days and were observed for PHB production. The cells producing PHB's were stained by Sudan IV and saffranin, the PHB produced as an intracellular molecule showed granular appearance and qualitative analysis was performed for the confirmation of production of PHB. The present investigation reflects on the possibility of developing a cheap biological route for production of Bio-plastics. Hence the use of Bio-plastics contributes to the clean environment.

Keywords:
PHB, Bio-plastics, molasses, Sudan IV

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POS-33

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Meta-analysis Of Gene Expression Data Discovers Novel Potential Cancer Candidates

Background:
Microarray and RNA-sequencing have been widely used to identify gene expression patterns at mass-scale level. Though both the technologies provide expression level for thousands of genes, many studies report only a few, and often ignore the genes that may have significant association with the disease, due to the limitations in the methodologies. Our meta-analysis approach (BMC Genomics. 2010 Aug 11; 11:467) has the potential to identify novel markers based on their consistency of expression pattern across multiple samples. Using this approach we have identified genes strongly associated with liver and lung cancers, and also obtained exciting insights into the gene-disease sub-type associations.

Methods:
Large scale gene expression data corresponding to lung cancer and liver cancer (HCC) were obtained from public repositories. The meta-analysis method was implemented to obtain genes strongly associated with the disease conditions. The genes were further evaluated for their relevance to the disease by functional and pathway analysis, as well as using literature and databases.

Results and Conclusion:
A significant number of genes that had very strong association with lung and liver cancers were never reported before to be associated with the diseases. We also identified many genes in lung cancer that were associated specifically with female smokers. Genes identified exclusively by the current approach were also found to be involved in various cancer related processes, pathways, and other cancers, further strengthening their association. Thus, our meta-analysis method can be very promising for identification of crucial genes associated with various disease conditions with multiple gene expression datasets.

POS-34

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ROLE OF P53 on DAT1 Induced Anticancer Effects

The p53 tumor suppressor protein is arguably the most important guardian of the Mammalian genome controlled by Tp53 gene present on chromosome number 17. It promotes longevity of the cells, reducing somatic mutations or the survival and proliferation of mutant cells. Under normal conditions, the protein's role is inconsequential because of the rapidity of its degradation. But stress signals of almost any form halt the degradation of p53, unleashing an active that triggers transient cell cycle arrest, apoptosis.Apoptosis is potent tumor suppressor mechanism that irreversibly prevent tumor genesis.

DAT1, a diaminoketothiazole, characterize in our lab as an efficient cytotoxic agent to cancer cells, showed similar binding as that of colchicines giving fluorescence and also showed activation of p53.

DAT1 is causing p53 activation in HCT116 cells. The nuclear localization of DAT1 (which confirms its activation) was checked. It was found that DAT1 treatment is causing nuclear accumulation of p53.

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P53 has an inhibitory effect on cell migration. The effect of DAT1 in controlling the migration of cells was monitored in HCT116 cells and p53 KO HCT116 cells. DAT1 is causing cell migration inhibition even in the absence of p53. Since p53 is being mutated in most of the human tumors.

POS-35

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Green Synthesis, Characterisation and Antidiabetic Evaluation of the Glucose Tolerance Factor (Gtf-Chromium) Fenugreek Nanoparticle

Diabetes is a metabolic disorder caused either by lack of insulin or body's inability to use the insulin. WHO estimates that diabetes will be the 7th leading cause of death by 2030.The nanoparticles (NPs) are being used effectively for detecting and treating diabetes. The NPs can be used in the target drug delivery system as they can be easily absorbed and can be bound to the receptors. Many studies have proven that chromium deficiency is associated with increased blood glucose levels and diabetes mellitus. Therefore the present investigation is focused on, assessment of antidiabetic potential of nanoparticles synthesized from biofortified (chromium enriched) (US App.No. – 13/805079, US 2013/0139282, 2316/CHE/2010) fenugreek (Methi). In this study the biological green method was chosen to synthesize nanoparticle using chromium enriched fenugreek extract. Chromium (III), silver and zinc oxide nanoparticles were synthesized using aqueous, methanol, aqueous-methanol and chloroform extract of biofortified fenugreek. The extracts of fenugreek seeds available in the market served as a control. The formation of nanoparticle was confirmrd by UV-VIS spectroscopy. The presence of metal and nature of nanoparticle formed were verified by X-ray diffraction (XRD) analysis. Further characterisation of shape, size and morphology of the nanoparticles were carried out using Fourier transform infrared spectroscopy (FTIR) and Scanning electron microscope (SEM) analysis. As inhibition of a- amylase and a- glucosidase enzyme retards the carbohydrate digestion, the effect of time and dose of nananoparticles on inhibition of a- amylase and a- glucosidase was carried out by standard method. Here we report an inexpensive, non toxic and reproducible method for large scale synthesis of nanoparticle using chromium enriched fenugreek extract. The three different nanoparticle exhibited a dose response inhibitory activity on a- amylase and a- glucosidase model as compared to control. The result indicates the nanoparticles have biocatalytic potential for targated drug delivery to be used as antidiabetic agent.

POS-36

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Pseudomonas and Aeromonas Bacteria Isolated From Anabas Sp. Show Virulence

Significance of Aeromonas and Pseudomonas bacteria causing outbreaks of diseases in feral and aquaculture fish production is of paramount importantance.Seven isolates of Aeromonas hydrophila (4) A.veronii (2) and Pseudomonas aeruginosa (1) isolated from normal,ulcer affected Anabas sp from pond examined for virulence.Invitro experiment conducted in 10 disinfected 30L glass aquaria filled with chlorine free water 300 healthy Anabas sp(60-100gm)were used in which 30 fish were stocked in each aquarium.Two aquaria stocked with 20 fish each were used control.Fish were acclimatized for 19 days prior to Infection experiment. Each fish except control were intramuscularly injected with 0.1 ml of experimental bacteria (conc., 2.3×108CFU/ml) using 21/guage sterile needle. Infected fishes were observed for 19 days. Injected bacteria were then isolated from experimental fish and subject to morphological, biochemical, antibiotic susceptibility.Tests result showed that 120 out of 190 infected fish developed clinical abnormalities such as skin darkness, scale detachment, blindness, large irregular haemorrhage on body surface, fin necrosis, exophthalmia and eye cataract within four days with mortality rate of 97%. Isolated strains were motile, gram (-ve) and resistant to Ampicillin, Streptomycin, Amoxyllin and Novobiocin. This study concluded Aeromonas and Pseudomonas sp. are responsible for outbreak of ulcerative diseases in pond fish.

Key words:
Pseudomonads, Aeromonads, Virulence, Anabas sp

POS-37

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Removal and Recovery of Indigo Dye from Textile Industrial Effluents Using Biological Adsorbents

The global worth of adsorbents market is estimated to reach $3.8 billion by 2018, growing at 6.1% GDP from 2013 to 2020. These adsorbents are not cost-effective and hence there is a need to develop cost-effective adsorbents such as biological adsorbents which will be the solution for revenue generation in the global adsorbents market. In this context, many research works are focussed to develop adsorbents like coal ash, bark, pine wood, crushed bricks, clay dust. The objective of our project is to exploit biological adsorbents for the removal of indigo dye by varying different parameters, fitting them into suitable mathematical model, and then to recover the dye from the adsorbents.

This project aims at designing and executing a system which can recover the useful indigo dye from waste. It is a down stream processing along with mechanically operated units with hen feathers and de-oiled soya as an adsorbent. The basis for experimentation is based on batch and continuous adsorption studies of different biological adsorbents on indigo dye. The data obtained is analyzed by fitting into Freundlich Langmuir mathematical model isotherm to obtain adsorption efficiency.
In the present work we have removed indigo dye of 98% (50 ppm), 99% (100 ppm) using hen feather as adsorbent and removed indigo dye 91% (50 ppm) and 89% (100 ppm) using De-oiled soya as adsorbent. The batch adsorption results obtained were used to fit the Freundlich mathematical model. The slope value was 3.73 for 50 ppm and 2.92 for 100 ppm indigo dye using hen feather adsorbent and 1.15 for 50ppm and 0.53 for 100ppm of indigo dye using deoiled soya adsorbent. The outcome of the project has enabled us to develop a efficient process for the recovery of chemical dye and move forward in the field of biological adsorbents. In the future direction, further work can be carried out in separating several useful components such as oils, emulsions, and acid/basic solutions.

POS-38

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Study of Murayya Koenigii for the Removal of Cr (VI) From Aqueous Solutions

Chromium (VI), a toxic metal ion, is widely used in electroplating, stainless steel production, leather tanning, paint and textile manufacturing. Cr (VI) is mobile in environment, acutely toxic and carcinogenic. In the present study the ability to remove Cr (VI) from aqueous solutions has been compared using leaves of dwarf and gamthi varieties of Murayya koerigii abundantly available in Selaqui region of Dehradun as adsorbent. Effects of temperature, pH, initial concentration of adsorbate and adsorbent dosage have been studied for effective removal of Cr (VI). The obtained results were analyzed by the Freundlich and Langmuir equation at different temperature and related parameters were determined for each adsorption isotherm. The study also includes results on the kinetic dimensions of adsorption of the Cr (VI) on derived adsorbent. FTIR studies confirmed that groups were the main groups involved in the metal uptake.

Keywords:
Chromium, Murayya koerigii, Adsorption, Variety, Kinetics.

POS-39

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Isolation and Identification of Acinetobacter Species from Clinical Samples of Intensive Care Unit Patients.

Acinetobacter spp. is an emerging pathogen to high virulence, which is increasingly responsible for large number of infections including nosocomial pneumonia, meningitis, endocarditis, urinary tract infections, conjunctivitis, burn wound infections and bacteraemia. They are widely distributed in soil and water, grows at various temperature and pH environment and uses vast variety of substances for growth. Transmission of Acinetobacter to multiple patients is enhanced by the combination of multiple-site patient colonization, widespread environmental contamination, prolonged survival on dry surfaces and on hands, and the capacity to develelop resistance to virtually all classes of antimicrobial agents. The aim of this study was to examine the prevalence rates, antimicrobial susceptibility of Acinetobacter spp. among clinical samples and evaluates their correlation with prospective risk factors which may influence the spread of infections associated with this organism. The incidence rate was observed 4% among the hundred clinical samples in which the prevalence of A. junii(50%) was similar to A. lwoffii(50%). The isolates showed high level of resistance towards almost all the antibiotic tested in the present study while being sensitive only for imipenem. It was observed that incidence of Acinetobacter spp. were significantly associated with the gender, extreme age of patients, long duration of hospital stay, economic status and the drug administration to patients. The analysis of risk factors and susceptibility pattern has been measured alarming and action must be taken to reduce the infection, strict infection control measures must be applied to the patients with these risk factors. Education to medical personnel and enforcement of infection control practises are all needed to reduce antimicrobial resistant bacteria nosocomial infection.

Key Words:
Acinetobacter species, incidence, antimicrobial susceptibility, risk factors.

POS-40

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Development of Shelf- Stable Pet Food Using By-products from Meat and Milk Processing Plants

By-products recycling is one of the major problem faced by food industry in India. The waste generated by small and medium scale processing plants ultimately discarded in to river or sea creating serious environment pollution. The present study was undertaken to check the feasibility recycling the by-products from meat and dairy plants to a pet food. Shelf stable pet food (SSPF) was prepared by utilizing meat cum bone meal, refined wheat flour, blood serum, sugar, yeast, rendered fat (RF), and ghee residue (GR). Three formulations were prepared viz., 10% RF+0%GR (treatment-T1), 5%RF+5%GR (treatment-T2), and 0% RF+10% GR (treatment-T3) and analyzed for the proximate composition and acceptability test. The average moisture content of T1, T2 and T3 were 1.70%, 1.78% and 2.01% respectively and moisture of T3 was significantly ($P<0.05$) higher than T1, T2. Use of ghee residue significantly increased the protein content (from 26.83±0.16 to and reduced the fat content (from 14.37±0.17 to 9.92±0.12) in T2 and T3. The calcium and phosphorus ratio of T1, T2 and T3 were 1.41, 1.62 and 1.67 respectively. Out of the three formulations T3 was more acceptable than T1 and T2.

Key words:
Pet food, shelf-stable, meat cum bone meal, rendered fat, ghee residue.

POS-41

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Amplification of Portion of Pgip Gene in Wild Solanaceae Members

Plant natural defence mechanisms are one of the most active and exciting research areas in agriculture and in forestry. One of the latest developing areas is the study of endopolygalacturonace (PG) produced by plant pathogenic fungi and polygalactouronase inhibiting proteins (PGIPs), anchored on cell wall of plants which acts as a primary barrier. To inhibit the action of PGs plant secrete PGIPs as defence mechanism. PGIPs are mostly encoded by a single open reading frame of about 1,000 base pairs. They contain a single peptide that is processed through the endomembrane system for targeting to the apoplast. The present study was therefore undertaken to understand the molecular mechanisms underlying host pathogen relationship. The pgip gene was isolated in Datura metel L. and solanum torvum and a part of the gene was amplified using degenerate primers designed in lab. The plant genomic DNA was isolated using DELLAPORTA method and CTAB method. Amplification of pgip gene is done using PCR and the products are viewed using native PAGE. The genomic DNA of D.metel and S.torvum isolated was intact and pure enough to carry out degenerate PCR. The first set of primers used has correct flanking regions in pvpgip1 and tomato pgip genes and 500 bp products was amplified by this primers but no amplification in the genomicDNA of D. metel and S. torvum. A new forward primer with the already used reverse primer amplified an expected 600bp product in pvpgip1 as well as in D. metel. This new set also failed to amplify any product inS. Torvum.There is no intron in this region of pgip gene of D. metel. Further work on sequencing and amplification of full length pgip gene in D.metel will allow us to know about relatedness of this other known sequence of pgip genes and can be utilized for the cloning of resistance in cultivate crop plants.

Keywords:
D.metel, S.tarvum. Pgip gene, degenerate primer, plant pathogen

POS-42

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Competitive Interaction of Basmati and Non-Basmati Rice (Oryza Sativa L.) Cultivers under NaCl Salt and Aqueous Testa Extracts of Cashew-Nut (Anacardium Occidentale L.)

Competitive interaction of basmati (cv. Kasturi) and non-basmati (cv. Pant Dhan 11) mixed culture of rice (Oryza sativa L.) in presence of aqueous extracts of testa of cashew-nut (Anacardium occidentale L.) under NaCl salinity during seedling stage was studied in laboratory conditions. Basmati and non-basmati seeds were sown at 0, 0.5, 1.0% (w/v) NaCl concentrations along with 2.5 and 5% aqueous testa extracts (TE=1.5gm/100mL) at 29±2oC under dark for 10 days. Results showed that, significant competitive interaction in mixed-culture of rice cultivers under salinity stress in presence of aqueous testa extracts. In 0.5% salinity+TE treatments of basmati/non-basmati mixed cultures, AS (speed of accumulated germination) indicates sensitivity to germination in basmati and stimulation in non-basmati cultivers. SVI (seedling vigour index) values showed mixed culture had positive impact on basmati and negative impact on non-basmati during early days of seedling emergence. RCI (relative competitive intensity) values for root length, seedling height under 1.0% (w/v) salinity+5% TE treatment showed competitive facilitation in basmati and competitive inhibition in non-basmati and competitive facilitation for seedling dry weight in both the cultivers. CR (competitive ratio) values suggest under 0.5% (w/v) NaCl+2.5% TE and 1.0% (w/v) NaCl+5% TE treatments basmati was better competitor for root length, seedling height and dry weight than non-basmati cultiver. The relative interaction index (RII) showed competitive interaction for accumulating both shoot and root biomass. Root and shoot biomass increased under 0.5% (w/v) NaCl+TE and 0.5% NaCl + 5% TE respectively in basmati and decreased in non-basmati. Shoot biomass increased in 1.0% (w/v) NaCl + 5%TE in both the cultivers. Presence of allelochemical (TE), competitive ability of basmati (cv. Kasturi) increased under NaCl salinity stress.

Key words:
competition, interaction, cultiver, mixed, salinity, stress, testa, cashew-nut.

POS-43

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Identification of Novel Genes Involved In Meiosis by a Genome Wide Screen

Budding yeast Saccharomyces cerevisiae contains a group of proteins named ZMM that constitutes a link between recombination and Synaptonemal Complex (SC) assembly. Yeast mutants that lack ZMM proteins have defects in recombination, SC formation and nuclear division progression. Meiotic cell cycle progression in zmm mutants is modulated by temperature. This conditional behavior is different at high and low temperatures. In my work so far, I have tried to identify new zmm-like genes involved in meiosis. To that end, I have carried out a genome-wide screen in the budding yeast S. cerevisiae. I have identified sporulation temperature sensitive zmm-like truncation mutants by using minitransposon mediated random insertional mutagenesis approach. To confirm that the observed sporulation-temperature sensitive phenotype is caused by the transposon, a genetic outcross assay was carried out, and to determine the exact position of transposon integration in the yeast genome, direct genome sequencing was performed, followed by Southern hybridization. The defects that can potentially be detected by this genome wide screen approach are growth defects, defects in meiotic divisions and spore viability defect. Different classes of mutants have been identified, suggesting that insertional mutagenesis mediated genome wide screen is an appropriate genetic approach for identifying new genes involved in meiosis.

Key words:
Saccharomyces cerevisiae, meiosis, transposon, temperature sensitive phenotype.

POS-44

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Hemoglobin is the key protein in red blood cells that carries oxygen around our bodies. A haemoglobin-based oxygen carrier (HBOC) could be used as a substitute for blood lost in surgery or trauma, but to date attempts to make a safe and effective HBOC have proved problematic. The redox activity of heme iron, when outside the safe confines of the red blood cell, is considered a key problem when attempting to engineer a safe (HBOC). At HaemO2 we aim to reduce the intrinsic toxicity of haemoglobin by engineering the redox active tyrosine and we have engineered a range of novel hemoglobin molecules that have additional tyrosine residues; consequently they are less likely to induce oxidative damage. Patents have been granted in the USA and Australia and are pending in other territories.

POS-45

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Is Nicotiana Attenuata's Defense Metabolite Chlorogenic Acid Useful or Harmful to Its Specialist Herbivore Manduca Sexta?

Plants produce various secondary metabolites. Several plants produce a phenolic compound chlorogenic acid (CGA).There has been a sizable amount of literature on the effect of chlorogenic acid on herbivore insects. Interestingly, it has been observed to exert positive, negative or no effects, highly depending upon the diet through which it was ingested. It was surmised that if CGA ingested through artificial diet, it exerts negative effect and if it is ingested through the plant, it exerts positive or no effect on N. attenuata's specialist herbivore Manduca sexta. To study the effect of CGA on M. sexta when CGA is ingested through N. attenuata, we silenced N. attenuata hydroxycinnamoyl-CoA quinatetransferase (NaHQT; key enzyme in CGA biosynthesis) through virus-induced gene silencing (VIGS) and generated N. attenuata transient lines with suppressed CGA (NaHQT-VIGS). M. sexta larvae grown larger on NaHQT silenced plants than the larvae growing on wild type plants, suggesting that CGA ingested through N. attenuata is harmful to M. sexta. A midgut expressed carboxylesterase (COE) gene was downregulatedin M. sexta larvae feeding on NaHQT-VIGS plants. COE was also up-regulated in larval midgut in response to CGA when larvae fed on artificial diet containing CGA. To observe the correlation between M. sexta carboxylesterase (MsCOE) and CGA, we generated the N. attenuata plants with inverted repeats (ir) of MsCOE (irCOE lines). The transcript levels of COE are significantly decreased when larvae fed on irCOE and NaHQT-VIGS plants. Taken together, MsCOE is induced in response to CGA ingestion and may play a role in metabolizing CGA to Reduce the negative effect of CGA on M. sexta larvae.

POS-46

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BISCUIT: Bioinformatics Involvement of Schools and Colleges Utilizing Information Technology

Bioinformatics is widely acknowledged as a valuable addition to traditional biological approaches in recent decades. This field, which is located at the intersection of biology, computer science and data analytics, is currently very much in demand by industry and academia alike. However, we have observed that the youth in India remain largely oblivious to bioinformatics as a discipline, for various reasons. One of these reasons is lack of exposure to computational biology in general, and scarcity of resources through which to exercise their natural curiosity. Through BISCUIT, we are attempting to connect various centres of bioinformatics excellence across India (BTISnet centres) to their neighboring school and college students. The knowledge gap in this particular field can easily be bridged using the expertise and resource of the BTISnet centres, and BISCUIT aims to be a platform to enable this exchange. We provide an easy-to-use interface (both web and mobile), which will aid in the hosting of workshops and training sessions on DNA, RNA and protein analysis. BISCUIT also provides access to a database of contact information of recognized bioinformatics institutes and personnel in India, thus proving invaluable to students interested in such research.

POS-47

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Phylogenetic Analysis of Ras Subfamily Proteins

Cancer is primarily an environmental disease with 90–95 % of cases attributed to environmental conditions and 5–10 % due to inherited genetic defects. RAS (Rat Sarcoma) proteins act as binary molecular switches and play an important role in intracellular signal transduction which regulates processes such as actin cytoskeletal integrity, proliferation, differentiation, cell adhesion, apoptosis, and cell migration. The present bio-computational analysis were performed using web-based tools and servers. Multiple sequence alignment of selected human RAS subfamily proteins with other homologous sequences revealed highly conserved regions. The present work determined the physico-chemical properties of selected RAS proteins such as their hydrophilic nature; alpha–helical structure; close evolutionary relationship with higher vertebrates and result shows the cancerous proteins (gi166706781, gi4505451) from human having most of homology with the number of species. On the basis of this study we can suggest that these organisms can be taken for the further study and after the successful analysis, these can be implemented on humans.

POS-48

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Utilization of Waste Derived Collagen Hydrolysate for Production of Functional Food Additives

Functional food products include essential nutrients that often go beyond the primary purpose of fostering normal growth and development. Competitive landscape and consumer dynamics provide attractive strategic opportunities for searching cheap, reliable and stable food additives that would maintain food texture and provide health benefits. India produces more than 3 million tonnes of fish per annum. Before being packaged for the final sale, raw fish is subjected to a series of steps which gradually remove about 20-80% material depending on the level of processing and the type of fish involved. This waste, which is rich in collagen, an extracellular protein, is disposed off as landfill. Studies carried out in the last 15 years have proved it beyond doubt that collagen houses a number of hidden or "cryptic" peptides that can regulate physiological processes. The study aims at extracting the collagen from fish waste, hydrolyzing it and using the peptide-rich hydrolysate as functional food additive to lower lipid peroxidation. Collagen was extracted from the remains of Perch and Pacu fish skin. The extracted collagen samples were purified through multiple cycles of acid dissolution and salt precipitation. The purified collagen samples were hydrolyzed enzymatically and the hydrolysate extracted through acid dissolution. The integrity of the hydrolysate was confirmed with SDS-PAGE and gel permeation chromatography, which confirmed the absence of high molecular weight bands of collagen and indicated the presence of low molecular weight components. The hydrolysate was assayed for lipid peroxidation inhibition using linolenic acid and ferric thiocyanate method. The collagen hydrolysates decreased lipid peroxidation by 45-65%. Collagen hydrolysate is safe for use as food additives because collagen is immunocompatible, non toxic and possesses high bioavailability.

POS-49

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Pretreatment of Fibrous Cotton Spinning Wastes by Solid-state Cultivation of Pleurotus Sp. For Bioethanol Production

Wastes generated from spinning mill grabs more attention in the field of bioenergy due to its higher potency to be used as sustainable feedstock for bioethanol production. The present study was aimed to investigate the pretreatment of fibrous cotton wastes by solid-state cultivation of white-rot fungi, Pleurotus sp. Cotton spinning wastes were collected from mills located at Coimbatore, the Manchester of South India. Batch experiment was conducted by mixing equal amount of cotton wastes and their compositional analysis were estimated. Cotton waste mixture (CWM) was sterilized and inoculated with the spores of Pleurotus sp. The cellulose structural modifications of fibrous cotton waste sample before and after pretreatment were analyzed using Attenuated Total Reflectance-Fourier Transform Infrared spectroscopy. CWM showed 14.7 %w/w and 69.9 %w/w of acid-insoluble residue and cellulose content, respectively. The optimum cellulose recovery and acid-insoluble residues degradation were obtained after 2 weeks of pretreatment. The significant impact on the absorbance peak intensity between the cellulose crystalline region of 1430 cm-1 and 1403 cm-1 and the optimum crystallinity reduction were observed after 2 weeks period. From the present study, it has been concluded that the solid-state cultivation of Pleurotus sp. can be used for the pretreatment of fibrous cotton wastes.

Keywords:
Pretreatment, Cotton, Spinning waste, Pleurotus sp., ATR-FTIR, Bioethanol.

POS-50

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Process Development for pilot scale xylitol production from indigenous yeast isolates

Combating the complex disorders such as Diabetes, Cardiac malfunctions and tumors will be possible by suitable regulatory pathways. Xylitol is a polyalcohol having relative sweetness equivalent to fructose and doesn't involve in insulin metabolic pathway. It also acts against dental cavities as anticariogenic compound in pharmaceutical ingredients. The present study deals about the production of xylitol in a two liter stirred tank bioreactor and estimation of its oxygen mass transfer coefficient with corn hydrolysate medium. Then organism employed here was isolated & identified from cane processing industry through standard biotechnological techniques. Corncob was milled, pretreated, hydrolyzed and used as supplementary medium with 49% initial xylose content (w/v). Physiological conditions such as pH, Temperature, inoculum volume and agitation speed was optimized using response surface methodology and adopted in bioreactor. The oxygen side mass transfer coefficient was also measured using dynamic gassing method. The stirred tank reactor was designed according to the standard procedures and all materials used for fabrication were stainless steel. The vessel has 17 liters working volume with aspect ratio for H: D as 4:1.

Key words: xylitol, API,

POS-51

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Putative Drug Isolated From C. Rotundus for Carbapenem Resistant Klebsiella Pneumoniae (NDM)

Carbapenemases constitute the well accomplished family of ß-lactamases which are also known as ß-lactam-hydrolyzing enzymes. The Klebsiella pneumoniae producing carbapenemases (New Delhi metallo-beta-lactamase) have annoyingly emerged as a cause of multidrug-resistant infections worldwide. Most of the carbapenemases producing organisms are resilient against inhibition by all the commercially viable ß-lactamase inhibitors. Meropenem, biapenem, ertapenem, and doripenem are slightly more effective against Gram-negative organisms than against Gram-positive organisms. Cyperus rotundus, belonging to the family, Cyperaceae is a weed, commonly referred to as "purple nut sedge". The plant extract was subject to GCMS, and the usefulness of the plant's compounds as a carbapenamase inhibitor has been evaluated. The ligand molecules and Meropenum were modelled using the tool UCSF Chimera 10.6.2 version, and their energies were minimized. The binding affinity of PDB KPC-2 carbapenamase from Klebsiella pneumoniae with these ligands were evaluated using the docking tool Argus lab and compared with the scores of Meropenem, an approved drug. The results demonstrated that the plant compounds secured a higher docking score than meropenem Therefore it is suggested that these compounds could be used for further in vivo and clinical studies in order to prove their efficacy as carbapenamase inhibitors.

Key words:
Carbapenemases, Meropenem, C. rotundus, klebsiella pneumonia.

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POS-52

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Synergistic Effect of Antibiotics on Multi Drug Resistant Staphylococcus Aureus: An In Vitro and In Silico Validation

Staphylococcus aureus, which stays harmless in the natural flora harbours the potential to threaten our life as a fatal pathogen. Its multi-drug resistant phenotype makes it one of the most daunting pathogenic bacteria in the history. Clinical isolates of multidrug resistant S. aureus which were initially identified in 1961 have practically withstood all the antibiotics that have been developed since 1940s. Generally, S. aureus infection causes painful skin and soft tissue conditions such as boils, scalded-skin syndrome and impetigo. We have evaluated the synergistic effect of ampicillin and streptomycin against samples of multi drug resistant S. aureus isolated from soil, air and skin. The analysed minimum inhibitory concentrations for the combinations were reduced to half compared to that while using a single drug. Also docking studies employing ampicillin and streptomycin as ligands against these S. aureus have demonstrated exceptional binding results. Henceforth, we infer that a clinical study using a combination of these antibiotics would establish their synergistic potency which is imperative to combat this superbug.

POS-53

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Functional Annotation of Selected Proteins fromthe Chromosome 1 of the Oppertunistic Pathogen: Neurospora Crassa

The OR74 a strain of Neurospora crassa's genome Build 2.1 which is available in the NCBI Map viewer database contains many unannotated, and functionally unpredicted, hypothetical proteins. Neurospora crassa is used as a model organism in the study of genetics, and hence, understanding the function of each of its predicted gene is of immense value. The first chromosome of this organism codes for 19 proteins, of which only 2 proteins have been assigned with specific functions. This study makes use of PSORT II which is recommended to predict cellular localizations for Animal and yeast sequences, and is used to functionally annotate those proteins whose function remains unknown. Simple Modular Architecture Research Tool (SMART) was used to identify particular functional domains and motifs from these protein sequences. Also, BioGPS, which is an extensible and customizable portal for gene and protein annotation was used to search over different databases to find the existence of any similar proteins in other organisms. Comparative genomics using BLAST has helped us conclude the most probable function for these proteins. The proteins selected were annotated with their most probable functions and four of these hypothetical proteins were found to contribute towards the virulence of the opportunistic pathogen. This prediction is very essential to evaluate the pathogenic predicament of the fungi.

POS-54

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Production of Biosurfactant and Assessment of Its Pesticide Degradation Ability

Several prokaryotes & eukaryotes produce surface active molecules, which are known as biosurfactants. Bioremediation is a process that aims the detoxification and degradation of toxic pollutants through microbial assimilation or enzymatic transformation to less toxic compounds. Lower toxicity, higher biodegradability, better environmental compatibility, high selectivity, specific activity at extreme temperatures, pH and salinity, and the ability to be synthesized from renewable feedstock makes these better then chemical surfactants. Extensive application of organo-chlorine pesticide in agricultural fields is of environmental concern because of its apparent persistence and toxicity to soil, aquatic and other ecosystem. Currently, India is the largest producer of pesticides in Asia and ranks twelfth in the world for the use of pesticides. Rhamnolipids are a class of glycolipid produced by Pseudomonas aeruginosa found to have application in pesticide degradation. Atrazine is a chlorinated insecticide and acaricide possessing a relatively broad-spectrum activity. In this study production and characterization of Rhamnolipid is done which is further used to study Atrazine degradation and post degradation analysis is done.

Keywords:
Biosurfactants, Detoxification, Rhamnolipids, Atrazine.

POS-55

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Process Optimization for Lactose Free Fresh Curd

Lactase is an enzyme normally present in the human body, meaning it is a protein accelerating a specific biochemical reaction as Lactase splits lactose (milk sugar) in glucose and galactose and Lactases exist as neutral lactases (pH 5.5 – 7.5) and as acid lactases (pH 3.5 – 5.5).The Lactose maldigestion is the inability to digest lactose andOccurs in 70% of the world's population.The Lactose intolerance refers to symptoms resulting from lactose maldigestion,Symptoms include bloating, cramps, flatulence and diarrhea and Often results in dairy elimination.An effort has been made to develop a bioreactor to make the hydrolysis of the lactose a cost effective method, novel and simple to operate either in batch or continuous mode. This instrument can provide long term mechanical and biochemical stability to immobilized enzyme preparations and effective hydrolysis of lactose in closed loop. The bioreactor is intended for use as a packed bed, comprising the immobilized enzyme in the form of blocks, sheets or granules of 2-4 mm diameter. This equipment has the provision for feed stream control, temperature and sampling, and also to recover the immobilized biocatalyst as well as to ensure enzyme free product.The system achieved hydrolysis purity of 98% in milk.The process gives Easy-to-digest, lactose-free or lactose reduced dairy products.

POS-56

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Urban Particulate Matter Activated Human Blood Cells and Platelet Membrane to Induce Pulmonary and Allergic Disorders

Exposure to urban particulate matter (UPM) exacerbates asthmatic lung inflammation, various respiratory ailments such as Allergies, Asthma, and pathogenic infections of respiratory tract as per (KSPCB survey, 2014-15). In Bangalore urban areas major pollutants contributing to Bangalore's high AQI (Air Quality Index) score include CO, NO, Suspended Particulate Matter (SPM), and Ambient Bioaerosols. These areas with high levels for particulate matter 10 (PM10) has almost a 41% increase in PM for Bangalore. In the current study we studied the effect of ambient air born viable particles obtained from Anderson biosampler on human healthy subject s blood derived PBMCs and platelet membrane. We investigated key regulators such as plasma nitric oxide, lipid peroxidation, amino acids, free fatty acids, haemoglobin, SGOT, SGPT, ALT, transport channels Na+, K+, Mg+ ATP ases, Phospholipids, Proteins, Cholesterol levels. Study experimental results reveal significant altered levels in platelet membrane-bound enzymes, membrane fluidity, Na+/K+-ATPase and biochemical parameters when compared to healthy controls.

Over all our ongoing study might represent new insights into mechanisms underlying the distribution, regulation of ambient air born viable particles, its biological effects and efficient control strategies implicated in human pulmonary and allergic diseases.

Key words:
Ambient air-born viable particles, Bioaerosols, Nitric Oxide, Phospholipids, Allergy

POS-57

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Ecofriendly Biodegradable Plates from Palsha Leaf

The leaves used traditionally for eating in India are banana, banyan and palash. Palash leaves contain no plastics, glues, lacquers, or any other kind of adhesive that would potentially leach into food. Will completely biodegrade in twenty days when placed in a landfill or compost bin. The production process of the plates does not require added chemicals or heavy infrastructure. The plate preparation consists mainly of heating and the pressing machine; because the tree drops its leaves naturally the production process doesn't require cutting or harming of the trees. The present work, emphasize the use of food grade leaves to make dishware by binder and heat molding. The biodegradable and food grade materials (such as palash leaf, maida) were used as natural source for the economic production of plate. The leaves of palash were collected, washed and dried under sun. The maida slurry was used as binder and paper disc of 7 inch size, 100 grams per square meter (GSM) thicknesses was used as base to stick the leaf. Maida slurry was applied uniformly onto the paper base and then heat pressed at 50ºC for 30-40 sec in molding chamber plate machine. The plates prepared were evaluated for various properties like rigidity, durability and temperature resistance. Addition of the paper base to stick the leaf increased the strength of the plate to hand held. The hydrophobic nature of the leaf base did not allow food to absorb in the plate.

Key words:
Palash leaf, biodegradable, binder, maida, nutrients, hydrophobic.

POS-58

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Green Synthesis of Silver Nanoparticles and Their Application in Dental Filling Material

Silver has been used for its bactericidal properties for many years. It has been used in water purification, wound care, bone prostheses, cardiac devices, catheters and surgical appliances. Green synthesis provides advancement over chemical and physical method as it is cost effective, environment friendly, easily scaled up for large scale synthesis and in this method, there is no need to use high pressure, energy, temperature and toxic chemicals. Dental caries is an infection, bacterial in origin that causes demineralization and destruction of the hard tissues of the teeth. If left untreated, the disease can lead to pain, tooth loss and infection. Azadirachta indica, commonly known as Neem, belongs to Meliaceae family. It is one of the most versatile medicinal plants having a wide spectrum of biological activity. In our research we are synthesizing SNPs (Silver Nanoparticles) from A. indica extract and use these SNPs in the production of novel combination for dental restoration fillings.

Keywords:
Silver nanoparticles, Azadirachta indica, dental filling materials & green synthesis.

POS-59

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Biodegradable Packaging Material from Rice Straw and Sugarcane Bagasse

Solid Waste management is an on-going problem of the world, especially in India. Packaging materials which are synthetic and non-biodegradable create majority of the solid waste. Non-biodegradable materials like plastics and polythene lead to environmental problems. Cellulose from the agricultural waste can be used as a solution for this problem. The main advantages are that the cellulose is inexpensive, abundant, renewable and biodegradable. The cellulose from biomass is used for the synthesis of packaging material, which in turn gets degraded and can be used as a source of nutrition for plants and animals. Bio-resources, especially agricultural waste (rice straw and sugarcane bagasse) have been targeted for synthesizing biodegradable packaging material. Rice straw and sugarcane bagasse were pretreated with NaOH and cellulose was separated. Glycerol was added as a plasticizer to the cellulose and was cast into a film using acrylic slabs. A biodegradable cellulosic film was obtained.

Key words:
Biodegradable, Cellulose, renewable.

POS-60

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Soil Fertility Maps Preparation Using GPS and GIS in Dhenkanal District, Odisha, India

Soil fertility maps of Dhenkanal district, Odisha were prepared by using Global Positioning System (GPS) and Geographical Information System (GIS) to make awareness among the farmers regarding use of balanced fertilization according to soil test based recommendation and integrated nutrient management for higher and sustainable crop production. Soils of different villages for each block were collected by GPS instrument. These soil samples were processed and analyzed in laboratory using standard methods. The soil characteristics data were entered in attributed table and linked with the GIS software to develop a relational database. The analogue soil fertility maps on 1:25000 scales were geo-referenced and digitized by using ArcGIS software. Thematic layers were
Developed for block boundaries to prepare the base map. Superimposing polygons (Spatial coverage) of block units and the base map, soil fertility maps were prepared. These maps were integrated in GIS to generate a composite database of GPS based soil of Dhenkanal district. These maps were divided into 8 mapping units (8blocks of Dhenkanal district). Based on the generated soil fertility maps, the status of organic carbon, available N, available P, available K, available S and micronutrients like Boron was assessed and suitable crops such as rice, fingermillet, pulses, vegetables and fruit crop have been identified.

POS-61

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Behavior of Escherichia Coli O157:H7 and Listeria Monocytogenes during Fermentation and Storage of Camel Yogurt

In addition to its nutritional and therapeutic properties, camel milk has the ability to suppress the growth of a wide range of food borne pathogens, but there is a lack of information regarding the behavior of these pathogens in products such as yogurt produced from camel milk. The objective of the current study was to investigate the behavior of Listeria monocytogenes and Escherichia coli O157:H7 during manufacture and storage of camel yogurt. Although camel milk contains high concentrations of natural antimicrobials, L. monocytogenes was able to tolerate these compounds in camel yogurt stored at refrigerator temperatures. Therefore, appropriate care should be taken during production of yogurt from camel milk to minimize the potential for postprocess contamination by this and other food borne pathogens.

POS-62

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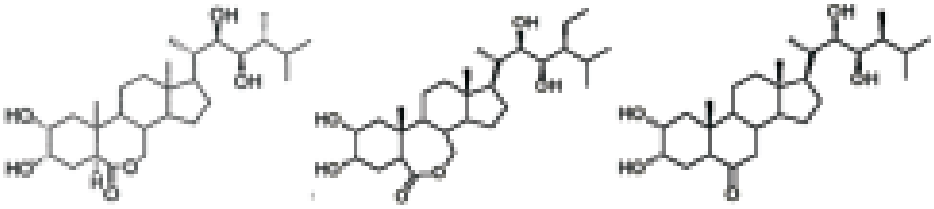
Improved synthesis and better understanding the regulatory roles for Brassinosteroids

The Improved stereo-selective synthesis of biologically active Brassinolide analogues like 24-Epibrassinolide, 22R, 23R, - 28 - Homobrassinolide, and precursor castasterones achieved at the Phytotron Research Center, has ensured the availability of these highly potent (10^{-10}) plant growth regulators in high purity (+98 % purity) and at a commercially viable cost for general crop use. New tool for screening of such molecules, like unique bioassays developed at the centre and field trials conducted with variety of crops, also helped improve our understanding of the regulatory role of Brassinosteroids, be it seed germination and seedling growth, lateral and tap root growth, shoot growth and differentiation, bud brake, flower initiation, fruit setting and development, fruit ripening process and senescence, response to variety of biotic and abiotic stresses as well as the execution of plant immunity systems. Better understanding of the Interplay happening between Brassinosteroids and other plant growth regulatory metabolites like Gibberellins, Auxins, Cytokinins, Polyamines, ethylene, Abscisic acid and other secondary growth regulatory molecules like Jasmonates, ubiquitous polypeptides and Strigolactones needed for variety of metabolic processes, has also opened new possibilities of crop-biotechnological options for bringing quality and yield improvement.



POS-63

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In Silico Prediction and Modelling of Putative T cell Epitopes of Dengue Virus for Vaccine Design

Dengue is caused by a mosquito-borne flavivirus (DENV). DENV is a RNA positive single-stranded virus. DENV causes a wide range of diseases in humans, from a self limited Dengue Fever (DF) to a life-threatening syndrome called Dengue Hemorrhagic Fever (DHF) or Dengue Shock Syndrome (DSS). In this study, prediction and modeling of T cell epitopes of Dengue virus antigenic proteins was performed. Molecular docking studies were carried out for highest scoring predicted segments with their corresponding MHC class II alleles. Immunoinformatics was applied in computational vaccinology to analyze the viral proteins which generate possible outcomes to obtain vaccine for Dengue virus. Here, ProPred was used to predict the promiscuous MHC class II epitopes of viral antigenic proteins. The molecular modeling of the selected epitopes as well as MHC alleles was done at CPH model 3.2 server. Molecular dynamics (MD) simulation studies were conducted using Discovery studio and Autodock .The epitope/peptide MRLLSPVRV of viral glycoprotein has shown the highest binding score with the DRB1*0101 MHC II allele. The predicted peptide is highly potential to induce T cell-mediated immune response and is expected to be useful in designing epitope-based vaccines after further testing. The results signify that the glycoprotein could be useful for future development of a vaccine controlling the spread of this emerging virus that could pose a new threat for humans.

Key words:
Dengue virus, T cell epitopes, MHC class II, Molecular Docking and Vaccine.

POS-64

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3D-QSAR Pharmacophore Modeling Studies Using Plant Ligands against Breast Cancer Receptor Tyrosine-kinase HER2

Breast cancer is one the most common malignancies in women and about 1.6 million new cases are diagnosed each year, worldwide. A mutation in the HER2 (human epidermal growth factor receptor 2) gene is seen in ~25% of all breast cancers. HER2 encodes for Receptor tyrosine-protein kinase erbB2, signalling through which promotes cell proliferation and counters apoptosis. Therefore, it must be tightly regulated to inhibit uncontrolled cell growth. The overexpression of HER2 plays an important role in the development and progression of breast cancer and hence considered a potential target in breast cancer therapy. 3D QSAR pharmacophore modeling was used to evaluate a set of 85 natural compounds showing cytotoxic activity against MCF-7 breast cancer cell lines to identify the important molecular chemical features. Development of the pharmacophore model was done using a training set containing 17 compounds and a test set containing 68 compounds with a significant level of diversity. Validation of the pharmacophore model was done using the Fischer randomization method. The best pharmacophore model was used as the 3D structural query to perform the database screening. Molecular docking of these compounds with HER2 was carried out to identify those with strong molecular interactions. The best pharmacophore model consisted of 3 hydrophobic regions, 5 H-Bond donors, 9 H-Bond acceptors and 6 aromatic rings. Using this model, two potential HER2 inhibitors were identified, which can further be used as anticancer agents with in vitro and in vivo validation studies

Keywords:
Breast cancer, MCF-7, HER2, plant ligands, 3D QSAR pharmacophore modelling

POS-65

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Identification of Putative Membrane Associated Drug Targets in Klebsiella Pneumoniae Subtractive Genomics Approach

Klebsiella pneumoniae is the most prevalent and clinically significant member of the Klebsiella genus of Enterobacteriaceae. K. pneumoniae infections are usually nosocomial and occur mainly in immunocompromised patients. Cases of antibiotic-resistant population have been rapidly increasing and consist of more than 20% of the total infected individuals. These hospital-acquired infections associated with antibiotic-resistant K.pneumoniae sometimes cause death among the infected individuals in ICUs. Prevention through vaccines is the only alternative for such clinically significant cases. Hence, combination of antibiotic and antigenic surfaces for vaccine preparation is used as the effective treatment. The insilico substractive genomic analysis of protein sequences has been made possible by the availability of K.pneumoniae proteome which can be utilized for the identification of drug targets and vaccine targets. A total of 182 essential proteins were identified out of which 46 proteins were unique to the microorganism. 12 membrane localized drug targets were identified in this study. Molecular modeling of only a few membrane localized drug targets was possible due to low sequence identity of the remaining proteins with PDB structures. Further characterization of these 3D structures by in vitro and in vivo studies can be performed for the development of novel vaccine epitopes and effective antibiotic therapy against K.pneumoniae.

Keywords:
K. pneumoniae, antibiotic-resistance, Insilico, Homology modeling, subtractive genomic

POS-66

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In-silico Analysis of GCMS Identified Compounds of Punica Granatum Peel with Putative Antidiabetic Drug Targets: A Dry Wet Lab Interaction Study

Diabetes mellitus (DM) is a complex metabolic disorder caused due to lack of insulin production or insulin resistance. DM is a leading cause of morbidity and mortality in the developed world. In the present study effects of methanolic extract of pomegranate peel (PGPE) (150 mg/kg body weight) on fasting blood glucose (FBG), lipid peroxidation (malondialdehyde [MDA]), antioxidant enzymes (superoxide dismutase [SOD] and glutathione peroxidise [GPx]) was tested in alloxan induced diabetic wistar rats and compared with standard drugs for 6 weeks. Molecular docking of the secondary metabolites of the pomegranate peel obtained by GCMS was carried out to identify the putative drug targets in diabetes that could have been inhibited by the compounds invivo and thereby reduce glucose levels. PGPE increased the plasma insulin levels by five folds and also increased the levels of the following antioxidants ($P<0.05$): SOD by 75.03%, GPx by 67.60% in plasma, SOD by 66%, GPx by 80% in kidney, respectively. Although PGPE did not increase the plasma MDA levels when compared to diabetic controls, a significant reduction in MDA levels was observed in the kidneys (52.08%; $P<0.001$). Aldose reductase and Tyrosyl –DNA phosphodiesterase-I were identified as a putative drug targets by In-silico studies, which were inhibited by almost all the compounds obtained by GCMS analysis. Further cell culture studies can be carried out to confirm the importance of the identified targets in the pathogenesis of many diabetic complications.

Keywords:
Diabetes Mellitus, Pomegranate Peel, Molecular Docking, GCMS, Reactive oxygen species, MDA, Insulin

POS-67

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Diabetes In Relation To the Risk ofAlzheimer's disease- A Microarray Based Analysis of Gene Expression Study

Diabetes Mellitus (DM) is a class of metabolic diseases characterized by defects in insulin secretion, insulin action or both causing hyperglycemia. It triggers dramatic increase in beta amyloid protein, which is toxic to brain cells, resulting in dementia. Alzheimer's disease (AD), a type of dementia is a progressive brain disorder that leads to memory loss and mental disabilities severe enough to interfere with daily activities. This phenomenon where resistance to insulin in brain causes AD is now commonly known as "Type 3 Diabetes". The main aim of this project was to find correlations between these two diseases. In this study, microarray expression data was retrieved from GEO database [GSE209661, GSE483502] and analyzed the genes common to both DM and AD which are differentially expressed using R script. We found 19 genes that were expressed differentially in both the diseases. Further, functional and cluster analysis was done to enrich the function of DEGs. Network analysis was applied to select a set of highly enriched pathways.

Keywords:
Type 3 Diabetes, Alzheimer's disease, Diabetes Mellitus, Microarray R, Differential Expression and Network.

POS-68

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Treatment of the Sludge Produced From Effluent of Ayurvedic Industry, Oushadhi, Thrissur and Its Effective Conversion into Compost

Land filling using sludge have some drastic environmental nuisances. The problems of dealing with sludge are complex because it is composed largely of substances responsible for offensive character of untreated waste water and only a small part of sludge is solid matter. The sludge produced from the effluent treatment plant at Ouhadhi, Thrissur, is also used for land filling purposes and associated environmental problems includes unpleasant odours , attraction of flies, and have potential for serious ground water contamination. The project aims for developing an appropriate environmentally and economically acceptable solution for reducing the problems associated with the sludge and at developing technology for producing high quality compost using ayurvedic sludge from Oushadhi. We developed method of anaerobic digestion involving anaerobic and biofertilising microbes accomplished by composting.

POS-69

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Studies on Microbial Load in Milk and Milk Products Isolated In Bhagalpur Region

To assess to microbiological quality of some milk products and microbial load in the products of diary industry of Bhagalpur region in Bihar state. Three packs of different brands of yoghurt and pasteurized milk purchased from four locations viz., Sahibganj, Tilkamanjhi, Khalifabagh and Naugachhia were assessed in duplicate. Isolates were identified using growth on agar and broth, Gram's reaction, colony morphology, biochemical test results and criteria for disregarding negative culture. Resistance of isolates from pasteurized milk was determined using the antibiotic sensitivity test (zones of inhibition). 33 bacterial and 12 fungal isolates belonging to 9 and 3 genera respectively were identified from the yoghurt samples. Presence of yeast was found to increase the microbial load of bacterial groups and decreased the load of live and active cultures, which was absent in 33% of yoghurt samples. 27% of samples were heat-treated and contained no LAC. A total of 19 bacterial isolates belonging to 6 genera were identified from the pasteurized milk samples.

Keywords:
Pasteurized milk, Yoghurt, Dye reduction test, Bhagalpur dairy products.

POS-70

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Nature of Allergenic Lipids in Airborne Pollen- A Bioinformatics Approach

Pollen grains are the tiny, yellow, dust-like particles found inside flowers. Formed in the anthers of the flower, pollen functions as the male fertilizing element of the plant. In order to produce its own type of plant, the pollen must be transported from one plant to another. This task, called pollination, usually is accomplished by insects, birds, or the wind. Airborne pollen, which is responsible for most of the hay fever symptoms, is extremely light and is produced in large quantities. Lipids are a major part of the pollen exine and exudates such as the Pollen Associated Lipid Mediators PALMs and Sporopollenin the pollen coat/exine polymer are allergenic. Here we conduct a bioinformatics analysis of the genes involved in Sporopollenin biosynthesis in wind pollinated species from Fungi, Gymnosperms, Monocots and Dicots to determine whether the synthesis of Sporopollenin is conserved through evolution. We show that the eight genes that are involved in the production of lipid monomers of Sporopollenin, in the model plant Arabidopsis thaliana PKSA, TKPR1, ACOS5, Cyp703A2, Cyp704B1, ABCG26, TT4 and SHT are all conserved throughout evolution in the wind pollinated species. This suggests that the lipid components of the outermost surface of the pollen (the part that allergic humans are exposed to) have not changed radically over the course of evolution. In addition our data suggests that allergenic lipids in airborne pollen might be of similar nature across all wind pollinated species.

POS-71

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Conversion Oflignocellulosic Biomass Into Ethanol

Converting lignocellulosoic biomass to ethanol is today major challenge with large availability as agro major but without genralising the best method and subject of recent intrest with rising pollution level, here I present a novel approach in mainly three step method which require less energy and less polluting in nature with non-significant consumption of sugar later transformed into other than ethanol. A pretreatment with microwave irradiation was applied to enhance enzyme hydrolysis of sugarcane tops immersed in water, aqueous ammonia and alkaline sodium hydroxide. Experimental results show that irradiation power (IP), alkali concentration (AC), incubation time (IT) and Biomass concentration (BC) were main factors governing the saccharification of sugarcane tops. The maximum fermentable was obtained under the optimal conditions ofpretreatment were IP320 W, IT 2 min, AC 0.30% w/w of biomass and biomassconcentration 10 g/L.The growth and production of lignocellulolytic enzymes from mixed culture of Aspergillusniger and Coridusversicolor,Submerged fermentation (SF) was performed using sugarcane tops pretreated under optimumconditions. Cellulases and xylanase reached the highest enzyme activity at 6th day of fermentation whilemaximumlaccase activity occurred at 12th day.

POS-72

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Heterologous Expression of Helicoverpa Armigera Chitinase and Study of Its Insecticidal Activity

Helicoverpa armigera, a major pest of 182 plant species across the world, is responsible for damage of economically important crops. The damage induced by this insect can range from 50 to 90 percent of the yield. Efficiency of chemical insecticides has increasingly compromised by insects' resistance. Evolution of the pest's resistance to the Bacillus thuringenesis toxins as a result of compound detoxification or altered target sites has left little hope on long term effectiveness of transgenic Bt cotton. Probably disruption of physiology by its own product is a better choice as the probability of the insect developing resistance to its own product is distant.

Insects' growth and development is strictly dependent on the capability to remodel chitinous structure, which makes up to 40% of dry exuvial mass, in which chitinase and chitin synthases play a key role. Chitinase helps in degradation of inner parts of the chitinous endocuticle, a process required to shed off the old exuvia and chitin synthases replace it with new cuticle. Insect utilize the crucial time gap between the two processes to maximize its growth. Interference with these enzymes will disrupt the whole process and the development into adulthood. Many researchers have employed insect chitinases for plant protection by way of disrupting the molting process and are successful in some cases at laboratory level.

The present work is aimed at heterologous expression of Helicoverpa armigera chitinase in E.coli and to study its insecticidal activity. cDNA construct encoding for chitinase of 1737bp was expressed in Rosetta DE3 and the enzyme was purified using Ni-NTA resin. The insecticidal activity, assessed in 3 modes, on Helicoverpa armigera, showed >50% larval mortality in case of injection assay, reduction in weight gain of the larvae in oral bioassay and only 50% pupation in topical application for the highest concentration, in respective category, used.

Key words:
Helicoverpa armigera, molting, resistance, chitinase, insecticidal activity

POS-73

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Soilless Farming Using Sericin Based Hydrogel

The domesticated silkworm, Bombyx mori is an important economic insect which produces massive amount of silk proteins. The major components of silk cocoon fibers are fibroin and sericin. The silk industry obtains silk fibers after degumming, processing of 0.4 million tons of dry cocoons worldwide, generates about 0.05 million tons of sericin protein as waste which is released into environment causing pollution. In the present work, we have prepared pure sericin powder by processing silk waste water. The protocols for the efficient extraction and recovery of pure sericin protein. The samples were analyzed for the protein concentration and presence of sericin through Lowry's method. The extracted sericin (having 32% serine amino acid) is used to produce hydrogels with polyethyleneglycol and glutaraldehyde. The protocols have been developed to synthesize sericin based various types of hydrogels by manipulating the concentrations of polyethyleneglycol and glutaraldehyde. The hydrogels having sericin protein are bioacceptable and antimicrobial in nature therefore having wealth of applications, for example, in agriculture (plant growth, in seed germination, water retention, soil conditioners etc.) and in biomedical fields (as wound dressing membrane and as antimicrobial water absorption layer in baby diapers and sanitary napkins).

Keyword:
sericin, Lowry's analysis, polyethyleneglycol and glutaraldehyde.

POS-74

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Low Cost Artificial Diet for Mulberry Silkworm

Sericulture is process of rearing of silkworm for the production of silk. According to CSB (Central Silk Board), sericulture is providing employment to around 7.6 million people in India. Mulberry silkworm is a monophagous feeding exclusively on mulberry leaves. The activity of sericulture is declining due to the reduction in mulberry cultivation. There is a decrease of 18.9% of the total mulberry cultivation in the past 5 years and is expected to decrease further due to rising cost of land, consumption of lot of water and involvement of huge labour. Low cost artificial diet for mulberry silkworms was formulated in order to overcome the above problems. The advantages of using it are: The diet will be available for the silkworms throughout the year, uniformly high quality nutrition can be maintained, the diet can also be fortified for higher quality, it breaks the dependency of sericulture on mulberry leaf and it provides good shelf life. Artificial diet was developed using various components which were from cheap sources for making the diet cost effective.

Key words:
Artificial diet, low cost.

POS-75

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Phylogenetic Analysis of 21 Isolates Producing New Delhi Metallo-beta-lactamase Type Carbapenemases

Multidrug resistance has increased worldwide since the year 2000. Various strains of Enterbacteriaceae associated with urinary tract infections have now emerged as beta lactamase hydrolysing, antibiotic resistant pathogens. Travel and hospitalization in the Indian subcontinent has been repeatedly portrayed as a perilous challenge by these extended spectrum beta lactamase producers. In March 2010, a study in a Mumbai hospital reported that the most carbapenem-resistant bacteria isolated, carried the blaNDM-1 gene. We have studied the sequence alignment of the 21 strains of the New Delhi metallo-beta-lactamase Type Carbapenemases, and have identified colossal variance among these. However, a region of similarity spanning 10 to 12 amino acid positions was also detected among five of these strains. The phylogenetic study based on Neighbour joining method and Minimum Evolution algorithm divided the 21isolates into three distinct groups. This study has been paramount in the understanding the huge variation among the NDM type carbapenemases. The phylogenetic analysis was instrumental in figuring out the molecular relationships among these strains and it is suggested that the scattered regions of similarity and identity could serve as drug targets in future, for novel antibacterials.

POS-76

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Studies on Removal of Reactive Dye by Vibriocampbilli & Augmentation by Ultrasonication

Textile industries are found in most countries and their numbers have been increased. Effluents from the dyeing and finishing process in the textile industry are known to contain color, high amount of surfactants, dissolved solids, and possibly heavy metals, which are important source of water. The dyes affect the aquatic system by decreasing the light penetration and solubility of gases. Azo and Anthraquinone dye are major groups of dyes being using in industries, of which diazo dye is of our concern.. From an environmental point of view, the removal of synthetic dye is of great concern since some dyes and their degradation products may be carcinogenic and toxic. During the study, bacteria which degrade diazo dye was cultured and the conditions were optimized for the study we used typical diazo dye Reactive Red 120. The spectral charecteristics of the dye as well as the stability of dye over a range of pH and temperature was checked. Our organism Vibrio campbelli degraded the dye, Reacive Red 120 within 4hrs under optimized temperature 35ºC and pH 9 under unaerated and nonagitated culture conditions. Decolourization profile was checked with the help of UV Visible spectrophotometer at 520nm. Degradation of dye was checked by HPLC profile analysis. The mechanical method of degradation was also done by doing sonication of dye solutions at different pH.

POS-77

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Anti-oxidant, Anti-inflammatory and Anti-microbial Properties of a Putative Nootropic Poly-herbal Formulation

Adolescent depression is difficult to treat as the adolescent brain is still developing and treatment with adult anti-psychotics leads to suicidal behaviour. Leveraging of Indian Ayurveda could constitute complementary or alternative therapies. Mentone is one such poly-herbal formulation of components of four different herbs (Centella asiatica, Evolvulus alsinoides, Tinospora cordifolia, Glycirrhiza glabra) that is being routinely prescribed to enhance memory, improve concentration and to relieve stress. However, the specific biochemical components that contribute to the medicinal properties of the drug are not yet known. Further their anti-microbial activity remains to be tested. In the present study, solvent extraction using solvents with increasing polarity was used for extraction. Extracts were used to characterize the phytochemicals present and to determine their antimicrobial activity.

The powdered ayurvedic drug was extracted using a series of solvents by different extraction methods. Proximate analysis of the drug, qualitative and quantitative estimation of phytochemicals in the different extracts and in powder form was carried out according to standard biochemical tests. Disc-diffusion method was carried out to test for the potential anti-bacterial activity of the ethanolic extract on human pathogenic bacteria such as Staphylococcus sp., Klebsiella sp., procured from the hospital and minimal inhibitory concentrations (MIC) were determined.

Proximate analysis yielded a total ash content of 52.96% with acid insoluble and water soluble components constituting 20.9% and 2.22% respectively. PH was acidic at 5.76 and moisture content was found to be 5%. Ash qualitative tests showed the presence of Cl, S, PO43- and Na as inorganic molecules. Soxhlet extraction yield with extractive values of 6.09% (ethanol) and 15.33% (aqueous) was comparatively higher than maceration extraction. Qualitative phytochemical tests showed presence of tannins, phenols, flavanoids, terpenoids, saponins, starch, triterpenoids and reducing sugars in ethanolic and water extracts. Glycosides and gums were also present in water and ethanolic extracts respectively. Tannin content was found to be 0.53±0.22%w/w (ethanolic) and 0.075 ± 0.03% w/w (aqueous) and total flavanoid content was found to be 0.29±0.17% w/w (ethanolic) and 0.064±0.04% w/w (aqueous). Drug filtrate also demonstrated a similar phytochemical profile. Ethanolic extract exhibited antimicrobial activity against Staphylococcus sp., and Klebsiella sp., with minimal inhibitory concentration (MIC) above 50mg/ml.

Soxhlet extraction was found to be suitable for extraction of phytochemicals in mentone. The antimicrobial property observed may be attributed to phenolics, while the synergistic action of some phytochemicals could be attributed nootrophic function that underlies improved neural activity.

POS-78

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Anti-oxidant, Anti-inflammatory and Anti-microbial Properties of a Putative Nootropic Poly-herbal Formulation

Polyherbal formulations that have synergistic and counterbalancing effects are widely prescribed in traditional medicine to treat various ailments, including stress, anxiety and depression. Depression constitutes an etiologically diverse group of brain disorders characterized by wide range of symptoms. Polypharmacy, polyherbalism underlies many ayurvedic treatments, where the pharmacodynamics of multiple molecules as active constituents with similar therapeutic activity are targeted to a similar receptor or physiological system. As a multiplicity of factors underlie depression, a combination of herbals may act synergistically and concurrently on multiple targets. In order to unravel the mechanisms of action of the drug, it is imperative to screen for bio-active properties of such poly-herbal formulations. Adolescent depression cannot be treated with adult anti-psychotics as it leads to suicidal behaviour. Thus the search is on for complementary, alternative therapies, specifically of drugs with broader therapeutic efficacy that are not toxic at high concentrations and retain efficacy at low concentrations. The present study was carried out to determine the bio-active properties – anti-microbial, anti-inflammatory, anti-oxidant properties of mentone extracts using solvents of increasing polarity.

Mentone was obtained in tablet form, powdered and macerated with a series of solvents. Total phenolic content in ethanol, methanol and aqueous extracts was determined. DPPH radical scavenging activity, reducing power and hydrogen peroxide radical scavenging activity were used to determine anti-oxidant property. Anti-bacterial property of ethanolic extract of the drug was tested against human enteric pathogens such as E.coli, Enterobacter sp., Proteus sp., Morganella sp., using disc diffusion method. Anti-inflammatory activity was determined in-vivo following mentone administration using formalin foot paw edema test and differential and total count of leucocytes.

Aqueous extraction generated the maximum yield. Total phenolics extracted was 0.11±0.001%w/w (methanol), 0.39±0.01%w/w (ethanol) and 0.49±0.13%w/w (aqueous) of mentone. There was a gradual increase in % DPPH quenching with increasing concentration in methanolic and ethanolic extracts. % DPPH quenching was found to be 13.40±0.51 (methanol) and 21.25±2.18 (ethanol) in 100µg/ml of the drug. Reducing power ability was found to be 0.53±0.01%w/w (ethanol), 0.12±0.005%w/w (methanol), 0.24±0.003%w/w (aqueous) of the drug.

Correlation between total phenolics and DPPH radical scavenging activity of both methanolic and ethanolic extracts is indicative of anti-oxidant property. Mentone did not demonstrate anti-microbial activity against enteric pathogens. The preliminary studies showed no differences in inflammatory response in rats treated with mentone and subjected to foot paw edema or in differential vs. whole leucocyte counts, indicating that the modus operandi of mentone remains to be established.

POS-79

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Isolation And Characterization Of The Gastrointestinal Microbiome of A Seed-eating Passerine Bird

Changes in the composition of the bird's microflora can have beneficial or detrimental effects on health, maturation and eventually sexual selection in the host. The changing microbial community of the gastrointestinal (GI) tract ultimately reflects the co-evolution of microorganisms with their host, the diet adopted by it and adaptation to environmental targeted/non-targeted pesticides and fungicides. Remarkably little is known about the bacterial community residing in the GI tract of passerine birds, which are mainly seed-eaters. Understanding the normal bacterial community will allow us to detect disruption in the microflora and analyze the effects of diet change and pesticide or fungicide exposure.

Primarily, we investigated the GI tract of zebra finch (Taeniopygia guttata) birds, which are a model organism for studying sexual selection, by using traditional culture plate techniques in order to first define the GI microflora of zebra finches. Using a series of standard culture methods, selective media and biochemical tests, subcultures were analysed and found to contain Enterbacter sp, Citrobacter sp., Klebsiella sp., E.coli, Serratia sp., Proteus sp., and Shigella sp.

In view of glyphosate effect on gut microorganisms with reference also to GM crops, the microorganisms isolated in our study were subsequently treated with a series of commonly used pesticides and fungicides used in agriculture and in post-harvest seed storage, using spread plate method to determine effects of the treatment on diversity of microorganisms. After short-term culture no inhibitory zones were observed with the concentrations tested, indicating either no effect of the tested pesticides and fungicide on the balance of the GI microbiome or that longer incubation times may be required, or that the tested pesticides and fungicide are activated in the physiological milieu of the gut.

Birds constitute non-target organisms in the agricultural use of pesticides and fungicides with evidence of ensuing mortality. Further studies are required to test levels required for inhibition and also to test whether variations in food availability and quality contribute to the gut microbiome of zebra finches.

POS-80

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Xylooligosaccharides Production and Purification Separation by Using Enzymatic Method.

Abstract—Xylooligosaccharides (XOs) are sugar oligomers made up of xylose units with the chain length of 2 to 10 and are considered as non-digestible food ingredients .It is mainly produced from xylan hydrolysis .XOs have a characteristic of prebiotic by promoting the growth of probiotic organisms. They have various physiological effects such as reducing cholesterol, maintaining the gastrointestinal health and improving the biological availability of calcium, animal feed, anti-cancerous. The Production of XOs from agricultural residues offers great scope to the nutraceutical and pharmaceutical industries as the raw material is cheap and abundantly available .The driving force of this study was to produce XOs from the organic wastes such as orange peels. These wastes are rich in xylan which can be used as a renewable material for producing XOs. XOs can be obtained by chemical or enzymatic method, but due to the yield of toxic by-product, enzymatic production is preferred. In the enzymatic extraction method acetic acid was used to prepare pellets from dried orange peels powder followed by xylanase enzyme degradation performed at 2h, 4h, 6h and 8h. Samples containing XOs were chromatographed on HPLC system having a fluorescence detector (Ex320nm, Em420nm). The column used was Agilent C18 of length 250mm and 4.6mm internal diameter.

Keywords:
Xylooligosaccharide, xylobiose, xylotriose, prebiotic, xylan, enzymatic extraction, HPLC.

POS-81

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Optimization of Batch Conditions forthe Biosorption of Chromium (VI) and Cadmium (II) From Aqueous Solutions Using Commercial Coffee Waste: Equilibrium Modeling and Kinetic Studies.

The main objective of this work was to use the abundantly available, Zero-Cost and untreated coffee grounds as biosorbent for the removal of cadmium (II) and Chromium (VI) from synthetic aqueous media. Batch adsorption experiments were performed as a function of pH, biosorbent dose, contact time, volume of the solution and initial metal concentration. The present study revealed optimum conditions for the removal process which included dose of biosorbent 2g for Cadmium(II) and 2g for Chromium(VI), initial metal concentration 25mg/l for Cr(VI) and Cd(II), Optimum pH 7 for Cadmium(II) and 2 for Chromium(VI), contact time 180 min for Cadmium(II) and 180 min for Chromium(VI) and volume of the solution 100ml for Cadmium(II) and 100ml for Chromium(VI). The maximum efficiencies of Cadmium (II) and Chromium (VI) removal by the coffee grounds were 93.05% and 92.2% respectively. Equilibriumm sorption isotherms of cadmium (II) and Chromium (VI) were analyzed by the Langmuir, Freundlich and Temkin isotherm models. The Langmuir and Freundlich model gives a better? t than the others. The results indicate that coffee grounds were used as inexpensive, effective and easily used adsorbents without any treatment for the removal of Cadmium (II) and Chromium (VI).

Key Words:
Biosorption, coffee waste, Equilibrium study, Langmuir isotherms

POS-82

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Extraction of Polyphenols from Orange Peels by Chemical and Microbiological Methods

Polyphenols are important antioxidants molecules playing a significant role in the prevention of degenerative diseases like cancer, cardiovascular, neuro diseases, inflammation, high blood pressure, Cholesterol increase .Polyphenols are present in abundant quantity in Orange peels. The aim of the current research is to compare the total polyphenols content extracted by using chemical and Aspergillus Niger organism. Three different varieties of oranges (Coorg, Nagpur, Kinnow) were selected and the peels from each of these samples were dried under different conditions (Sun dried, freeze dried and oven dried). Chemical extraction was done by using aqueous methanol mixture and Microbiological extraction was performed by using Aspergillus niger and incubating at 25 degree for 48 hours .Total polyphenols were estimated by using Folin Ciocalteu spectrophotometer method and some of the major polyphenols were identified and quantified by using C18 Column, PDA detector in HPLC. Micro extraction proved to be better than chemical in the lab extractions.Coorg orange peel showed a highest polyphenols content both in chemical and microbiological extractions.

POS-83

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Nucchu Ambli as a Health Food: Analysis of Microbial Population, Probiotic Potential and Biochemical Constituents

Traditional fermented sorghum based food product, ambli has been used as a summer refresher in south India and is a cheap source of many nutrients. This study aims to promote the consumption of the product as a health food by providing scientific data.

The product for analysis was prepared by soaking broken sorghum grains in water and cooked partially. It was then fermented for 6 hrs at room temperature with curd containing ?10?^5 cells/ml. This product was analysed for changes in microbial population and changes in biochemical parameters; pH, titratable acidity, total sugars, reducing sugars, vitamins and protein content. The changes in anti-nutritional factors i.e. tannic acid and phytate, digestible carbohydrates and phenolic acid were analysed. The antioxidant activity of the product was also determined. The lactic acid bacteria which are chiefly responsible for fermentation were isolated and were tested for probiotic potential.

Lactic acid bacteria was found to be predominant in number during the fermentation while yeast counts increased significantly and coliforms were found to be absent. The fermentation resulted in reduction in pH (0.6 units),total sugars (3mg/100mg) and increase in titratable acidity(0.08%), reducing sugar (26mg/100mg) and protein content(1.6mg/100mg). The lactic acid bacteria isolated were identified as L. Plantarum, L. Brevis, L.mesenteroides and Pediococcus pentosaceus. All the isolates showed appreciable probiotic potential in terms of acid and bile tolerance, gelatinase activity, antimicrobial activity and antibiotic sensitivity.

The food product was found to have appreciable total phenolic content, digestable carbohydrate levels and antioxidant activity. Fermentation leads to no significant changes in the values. On the other hand significant reduction occurred in the concentration of anti-nutritional factors upon fermentation. Sensory evaluation proved that the food product nucchu ambli was acceptable in terms of taste, texture, appearance and aroma.

POS-84

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Site Directed Mutagenesis of Mevalonate Kinase from Bacopa Monnieri (L.) A Key Enzyme in Production of Terpenoids.

Mevalonate kinase (MK; ATP: mevalonate 5-phosphotransferase; EC 2.7.1.36) plays a key role in isoprenoid biosynthetic pathway in plants. MK catalyzes the phosphorylation of mevalonate to form mevalonate-5-phosphate and leads to the formation of Iso pentyl pyrophosphate and dimethyl allyl phosphate which are the precursor for triterpenes. In this study sequence homology analysis of mevalonate kinase (MVK) proteins was performed and structural information for MVK lead to the hypothesis that there are nine active site residues present in MVK. These residues were mutated to replace acidic/basic side chains and the mutant proteins were isolated and characterized. The structural integrity of the mutant MVK proteins was studied. The functional importance of mutated residues was evaluated by kinetic analysis.

Key words:
Mevalonate kinase, sequence homology analysis, mutation

POS-85

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Extraction, Purification and Characterization of Antidiabetic Constituents from Syzygium Cumini Seeds

Diabetes mellitus is a chronic metabolic disorder which has assumed epidemic proportions. The long-term complications associated with this disease leads to devastating consequences. Prolonged exposure to hyperglycemia and impairment of oxidant/antioxidant equilibrium in diabetes leads to increase in oxidative stress. Traditional Indian medicines like Ayurveda and Unani prescribe Syzygium cumini to treat diabetes. The alcoholic extracts of Syzygium cumini exhibits hypoglycemic and anti-inflammatory activity. It also activates enzymes like Adenosine deaminase (ADA) and 5'-Nucleotidase (5'NT) that play an important role in preventing oxidative damage in platelets of diabetic patients.

This study reports the isolation of a Bioflavanoid glycoside, which shows anti-diabetic activity, from the seeds of Syzygium cumini. The extraction of the Bioflavanoid glycoside from the seed powder of Syzygium cumini was achieved by maceration using ethanol as solvent. The alcoholic extract was then enriched in Bioflavanoid glycoside by fractionation using various solvents. Silica Gel chromatography was used to purify the Bioflavanoid glycoside. The Bioflavanoid glycoside was then characterized using Thin Layer Chromatography and UV spectroscopy.

Keywords:
Syzygium cumini, Ethanol extract, Bioflavanoid glycoside.

POS-86

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Nanobiosensor forthe Detection of Ammonia Gas

Monitoring of ammonia gas is very important since excess presence of ammonia in the air causes respiratory problems. Use of enzymes in the sensors is advantageous due to their high selectivity and sensitivity. Here, the enzyme alanine dehydrogenase was used for the development of sensor for ammonia. This enzyme converts pyruvate to alanine in the presence of ammonia & NADH and generates two electrons. To transfer these electrons swiftly to the electrode the carbonnanotubes are used and the current generated was converted to voltage. The sensor was based on the amperometry and screen printed electrode was used. This nanobiosensor responds linearly to the ammonia gas in the range of 0-100 ppm.

POS-87

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Comparative Study of Antimicrobial Effect of Antibiotics Produced By Halophiles to Existing Antibiotics

90% of pharmaceutical antibiotics originate from actinobacteria. Such bacterias in non common and extreme environment conditions are a good source of novel antibiotic compounds. The new species in extreme environment conditions like halophiles and thermophiles are being investigated for newer antibiotic compounds. With the emergence of multi drug resistance in bacteria which is an important public health concern thus the newly identified antibiotics could play a vital role in medical microbiology. Halophiles which are a group of archaebacteria with high tolerance to salinity and acidic proteins that resist activity by other organisms, have been used for antibiotic production. Growth of such halophiles has been optimized in actinomycetes culture in starch caesin broth. The crude extract of antibiotics thus produced have been used against bacterial strains and compared with existing antibiotics and the zone of inhibition has been found higher in case of E.coli. Such antibiotics produced from halophiles can be a promising source as they are effective in higher temperature and increased salt concentrations against the existing antibiotics which are temperature sensitive.

POS-88

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Strain Improvement by Physical and Chemical Mutation to Enhance the Production of Fibrinolytic Enzymes

Fibrinolytic enzymes are one of the largest groups of proteolytic enzymes involved in numerous regulatory processes and as fibrinolytic action that catalyses the hydrolysis of specific peptide bonds in the substrate. This is activity depends upon a set of amino acids in the active sites of the enzyme. Many such fibrinolytic or thrombolytic agents have been isolated in the past by Bacillus subtilis. Investigation of bacterial sources for fibrinolysis can be an attractive option to dissolve blood clots resulting from random crosslinks which may lead to cardiac and cerebral strokes. Fibrinolytic enzymes from microbial sources may be used for food fortification and neutraceutical applications. They may also be used for conversions of discarded hair, nail and feather for useful biomass. Strain modification by mutants has been done on bacterial strains and its ability to enhance the production of fibrinolytic enzymes has been studied. Streptococchal sorces for fibrinolytic enzymes was mutated by physical and chemical means and percentage increase in the productivity of fibrinolytic enzymes were seen in chemical mutation. The enhancement in production has a huge potential in minimizing the cost of the enzyme in various biotechnological applications.

POS-89

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Development of Drug-seeds Targeting JAK-STAT Pathway, TNF-alpha, BAD, And NF-kB In Hepatocellular and Mammary Carcinoma

'Drug discovery' has historically been based on phenotypic readouts on the organism level, such as the effect of synthetic heterocycles or other natural products on humans. In my talk, I will combine the machine-learning tools, chemical synthesis, and biological studies to develop small-molecule targeting JAK-STAT pathway, TNF-, BAD, and NF-kB in hepatocellular (HCC) and mammary carcinoma (MC). STAT3 has emerged as a promising target for cancer therapy. We recently, synthesized 2-(1-(4-(2-cyanophenyl)1-benzyl-1H-indol-3-yl)-5-(4-methoxy-phenyl)-1-oxa-3-azaspiro(5,5) undecane and their biological evaluation against HCC was made, and identified as a potent inhibitor of the JAK-STAT pathway. TNF is a pleotropic cytokine known to be involved in the progression of several pro-inflammatory disorders. So, we developed biscoumarins as anti-cancer agents in vitro and in vivo and evaluated the mode-of-action as TNF blocker. We also found the anti-cancer small molecule (7-Carbethoxyamino-2-oxo-2H-chromen-4-yl)methylpyrrolidine-1-carbodithioate that targets NF-kB in HCC cells. Finally, I will focuss my talk on BAD, which is an apoptosis regulatory protein linked with relaying survival signals to carcinoma cells upon phosphorylation as Ser-136. We report the synthesis of novel small molecule, NPB as the high ranked compound that found to exert the anti-cancer effect on AKT mediated BAD phosphorylation in MC mouse model.

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Biography

Dr. Basappa has completed his PhD at the age of 28 years from University of Mysore and postdoctoral studies from Hokkaido University, JAPAN and Singapore-MIT Alliance for Research and Technology, Singapore. He was awarded Sir CV RAMAN Young Scientist award for his outstanding contributions in the field of chemical sciences. He has published over 90 peer reviewed articles in highly reputed journals. He obtained 5 international/national patents to his credits. His citation indices of i10-index were 26 and h-index were 19, and total citations of 983, as retrieved from Google Scholar.

POS-90

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Microbial Production of Hydroxycitric Acid

Globally, obesity has raised the occurrence of non-communicable diseases such as cardiovascular diseases, musculoskeletal diseases, diabetes and some cancers. According to WHO reports, obesity has doubled between 1980 and 2014. Currently, there are many treatments available for obesity, one such method involves the use of anti-obese molecules. Compounds such as Orlistat, Lorcaserin, Sibutramine, Metformin and Hydroxycitric acid are used as anti-obese molecules. Among these, Hydroxycitric acid is the preferred molecule since it shows high efficacy in controlling obesity, with minimal side effets. Several pharmaceutical companies (SD pharmaceuticals, Arena Pharmaceuticals, etc) extract HCA from the fruits of Garcinia cambogia, a native tree grown in south India. Due to geographical and seasonal limitation of Gracinia fruits, an alternative method of producing HCA is necessary. Hida et al., has reported Bacillus megaterium as an excellent producer of HCA. In our present study, we screened for the microorganisms present in fruits, leaves and soil which grows symbiotically with Garcinia tree. Morphological and biochemical tests done on these screened microorganisms proved the presence of Bacillus megaterium and Bacillus subtilis. Enrichment media was designed for Bacillus megaterium and growth was assessed. Later, HCA was recovered and purified from the culture.

POS-91

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Irrigational Impact of Distillery Spentwash on the Germination, Growth and Yield of Cereal Forages – Oats (Avena Sativa) and Maize (Zea Mays)

Studies were conducted to study the germination, growth and yield of cereal forages; Oats and Maize irrigated with distillery spentwash of different concentration. The spentwash in the ratio of 1:1, 1:2, and 1:3 was used and analysed for their plant nutrients such as Nitrogen, Phosphorous, Potassium and other physical and chemical characteristics. Experimental soil was tested for its chemical and physical parameters. Oats and Maize seeds were sowed in different pots and irrigated with raw water (RW) along with spentwash in the ratio of 1:1, 1:2, and 1:3. The studies of the germination, growth and yield were studied. It was found that the germination, growth and yield was very good in 1:3 spentwash irrigation compared to 1:1 spentwash, 1:2 spentwash and raw water irrigation for all the plants. Hence, Spentwash can be expediently used as a medium for irrigation in specific dilution without harming the atmosphere, water and soil.

POS-92

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