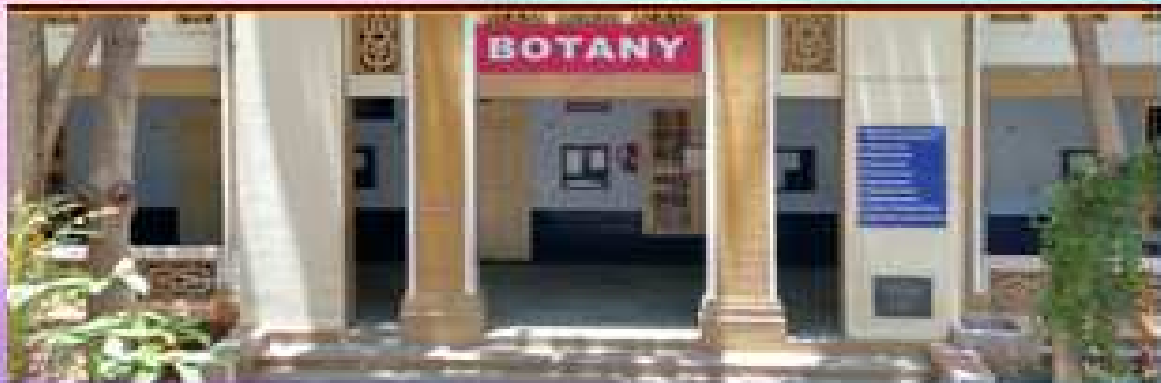




**International Virtual Conference
on
Frontiers in Biological Research
(ICFBR-2021)**



Organised by

Department of Botany
School of Life Sciences
St. Joseph's College (Autonomous)
Tiruchirappalli

in Association with

The Biomics, Bangalore

15-21st February 2021

About the Institution

St. Joseph's College is an affiliated First Grade College of the Bharathidasan University. It was established in 1844 by the Fathers of Society of Jesus (The Jesuits). It was affiliated to the then Madras University in 1866. The College celebrated its centenary in 1944 and sesquicentenary in 1995. It is the only college in Tamil Nadu awarded with "Heritage Status" by UGC. It acquired Five Star status awarded by the National Assessment and Accreditation Council (NAAC) in 2014, was recognised by UGC as a College with Potential for Excellence (CPE) in 2004, and was accredited with A Grade [4th Cycle] by NAAC in A++ Grade 2019. This Jesuit College trains young men and women of quality to be leaders in all walks of life so that they may serve the people of the nation in truth, justice and love.

About the Department

The history of the Department of Botany dates back to 1912, when the study of Natural Science was introduced at the Intermediate courses. Rev. Fr. Gombert, SJ, was guiding the Botany and Zoology sections. From 1952 onwards Rev. Fr. Rapinat pioneered the department. Under his guidance the B.Sc., degree Botany course was started in 1952. The M.Sc., degree in Botany was introduced in 1958, and the department was the first to offer it outside the Madras city in Tamil Nadu. The Research section was opened by the initiative of Rev. Fr. J. L. Gnanarethinam SJ. Research activities were conducted in plant physiology, plant biochemistry, palynology and ecology.

The Rapinat Herbarium, a center for Plant Taxonomic research has its origin from this department. Projects funded by UGC, FIST DST, CSIR, DBT, MoEF and NMPB have been sanctioned. By 2015 the department had awarded 50 Ph.D.s while publishing 500 research papers and 5 books. The department's botanical garden is internationally recognized.

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Oral Presentation

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| ICFBRO01 | <p>HYDRO BASE CULTURE – A NOVEL ALTERNATIVE SOURCE FOR GROWING CROPS WITHOUT SOIL</p> <p>Surya A and Kannan M.* Email: <i>suryaarul333@gmail.com</i></p> |
| ICFBRO02 | <p>ADVANCED BIO-INSPIRED DESIGNING APPROACHES OF NANOMATERIALS IN MEDICINE AND PHARMACEUTICALS WITH LESS TOXICITY & MORE EFFICACY AND THE IMPORTANCE OF NANOPARTICLES (NANOTECHNOLOGY) FOR THE THERAPEUTICS & EARLY DIAGNOSIS OF ALZHEIMER’S DISEASES& ITS APPLICATION IN BIOMEDICAL FIELD.</p> <p>Abhinaba Gupta * , Jayita Mandal , Pragati Maji , Dr. Nirmal KrPradhan², Dr.Prithviraj Karak,Dr.Raj Kumar Maiti Email: <i>parag97abhi@gmail.com</i></p> |
| ICFBRO03 | <p>PHYTOREMEDIATION THROUGH ORNAMENTAL PLANTS AS AN ECOLOGICAL METHOD FOR IN SITU CLEAN UP OF HEAVY METALS OF CONTAMINATED SOIL</p> <p>Namrata Jadaun*¹, Dr. Sonali Pandey ² 1, S. S. Jain Subodh Girls College Sanganer Jaipur. 2, JECRC University, Jaipur. Email: <i>jadaunnamrata7@gmail.com</i></p> |
| ICFBRO04 | <p>NITROGEN DOPED NICKEL COBALT OXIDE NANOFLOWER AS AN EFFICIENT CATHODE CATALYST FOR MICROBIAL FUEL CELL</p> <p>Mehak Munjal*, Raj Kishore Sharma and Gurmeet Singh E-Mail: <i>mehakmunjal2084@gmail.com</i></p> |
| ICFBRO05 | <p>CHARGE & HYDROPHOBICITY BASED CLUSTERING OF MAMMALIAN RHODOPSIN</p> <p>B. Vijetha, Yamini V, Jhinuk Chatterjee Department of Biotechnology, PES University Email: <i>vijetha375@gmail.com</i></p> |
| ICFBRO06 | <p>EFFECT OF LOW NITROGEN ON CHLOROPHYLL FLUORESCENCE</p> |

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| | <p>REGULATION IN COORDINATION WITH NET PHOTOSYNTHESIS AND RUBISCO EFFICIENCY OF RICE</p> <p>Sheikh Shanawaz Bashir Email: sheikhshahnawaz006@gmail.com</p> |
| ICFBRO07 | <p>NANOTECHNOLOGY IN THE FIELD OF MEDICINE</p> <p>Jobanpreet Kaur*, Gurveer Kaur, Sonia Kaur Department of Pharmacology, G.H.G. Khalsa College of Pharmacy Email: jobanpreetkaur006@gmail.com</p> |
| ICFBRO08 | <p>PHYTOCHEMICAL AND INVITRO STUDIES FOR HYDRO-ALCOHOLIC EXTRACT FROM FRUIT SAMPLE (EPICARP& ENDOCARP) AND ESTERIFIED EXTRACT FROM ENDOPHYTIC FUNGUS ASSOCIATED WITH LEAVES OF ELAEOCARPUSGANITRUS (RUDRAKSHA) AND GREEN SYNTHESIS OF SILVER NANOPARTICLES FROM THE EXTRACTS.</p> <p>^{1*}Debasish Sahoo, ²Virendra Vaishnav, ³Tanushree Chatterjee, ⁴Navita Gupta, ⁵Rajat Kumar Nayak Email: sahoodebasish3125@gmail.com</p> |
| ICFBRO09 | <p>GENOMICS AND MOLECULAR BREEDING FOR COOKING QUALITY IN SOFT RICE</p> <p>Suraj Panja and Narottam Dey* Rice Biotechnology Laboratory, Department of Biotechnology, Visva-Bharati, Santiniketan, India Email: narottam.dey@visva-bharati.ac.in</p> |
| ICFBRO10 | <p>IN VITRO INHIBITORY EFFECTS OF BOERHAVIA DIFFUSA ON FREE RADICALS & A-GLUCOSIDASE</p> <p><i>Amsaveni Sundarasamy¹, Vinothkumar Sampath² and Suresh Thangaraj^{1*}</i> ¹Department of Chemistry, Bharathiar University, Coimbatore – 641 046, India ²PG & Research Department of Chemistry, Government Arts College, Coimbatore-641 018, India Corresponding author: thansuresh@gmail.com</p> |
| ICFBRO11 | <p>REGULATION OF DROUGHT TOLERANCE IN PLANTS BY A RICE LECTIN PROTEIN, r40c1</p> |

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| | <p>Chandan Roy¹, Salman Sahid^{1,2}, Riddhi Datta^{2*}, Soumitra Paul^{1*}</p> <p>¹Department of Botany, University of Calcutta, Kolkata, West Bengal, India</p> <p>²Department of Botany, Dr. A. P. J. Abdul Kalam Government College, Action Area, New Town, Kolkata, West Bengal, India</p> <p><i>Email: suchandan.roy35@gmail.com</i></p> |
| ICFBRO12 | <p>MOLECULAR CHARACTERIZATION AND PREVALENCE OF MACROLID, LINCOSAMIDE AND STREPTOGRAM B (MLS_b) RESISTANCE FROM NASAL CARRIAGE STAPHYLOCOCCUS AMONG HEALTH CARE WORKERS FROM KOLHAPUR, MAHARASHTRA, INDIA</p> <p>Arun Kumar P* and Roma A Chougale</p> <p>Dept. of Microbiology, D.Y Patil Medical College, Kolhapur</p> <p><i>E.mail: microarunkumar@gmail.com</i></p> |
| ICFBRO13 | <p>TARGETING EFFLUX PUMPS OF DRUG RESISTANT ACINETOBACTER BAUMANNII TO COMBAT EFFLUX MEDIATED DRUG RESISTANCE: COMPUTATIONAL APPROACH</p> <p>N.K.SATHISH KUMAR.</p> <p><i>Email: sathish2128398@gmail.com</i></p> |
| ICFBRO14 | <p>ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS USED BY PANAMARATHU PATTI AND RURAL PEOPLE IN SALEM DISTRICT OF TAMILNADU, INDIA</p> <p>¹Krishnapriya, R and ^{2*}Senthilkumar, M</p> <p>¹PG and Research Department of Botany, Vivekanandha College of Arts and Sciences for Women (Autonomous), Elayampalayam - 637 205, Tiruchengode, Namakkal, TN, India</p> <p><i>*Corresponding author e-mail: drmsenthilkumar@vicas.org</i></p> |
| ICFBRO15 | <p>FLORISTIC STUDY OF MEDICINAL PLANTS IN MARUDHUR VILLAGE, KARUR DISTRICT, TAMIL NADU, INDIA</p> <p>Venkatalakshmi. C & M. Bhuvanewari*</p> <p>PG & Research Department of Botany, Vivenkanadha College of Arts and Sciences for women (Autonomous) , Elayampalayam, Tiruchengode, Namakkal District.</p> <p><i>Email: 19pbov033@vicas.org</i></p> |
| ICFBRO16 | <p>EFFECT OF SELECTED PLANT DYES ON FABRICS</p> |

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| | <p>k. Jamuna, Dr .c. chitravadivu*, Vellalar college for Women, Thindal. <i>Email: kjamuna499@gmail.com</i></p> |
| ICFBRO17 | <p>PROCESS OPTIMIZATION FOR THE EXTRACTION OF LOW COST AND ECO-FRIENDLY FOOD COLOURANT FROM FLOWER PETALS – A GREEN APPROACH M.KAVINKUMAR K S RANGASAMY COLLEGE OF TECHNOLOGY,TIRUCHENGODE-637215 <i>Email: kavinkumarbeece@gmail.com</i></p> |
| ICFBRO18 | <p>ENVIRONMENTAL DISASTERS AND ENVIRONMENTAL IMPACT ASSESSMENT Dr.Seema Saxena S.S.Jain Subodh Girls P.G.College, Sanganer, Jaipur <i>Email: rajivsaxena07@rediffmail.com</i></p> |
| ICFBRO19 | <p>CHARACTERISATION AND IMPACT OF PLANT GROWTH PROMOTING RHIZOBIA (PGPR) ISOLATED FROM ACACIA CATECHU SEEDLING ¹Prakriti Jhilta, ¹Neerja Rana and ²Bhawna Dipta ¹Microbiology Division, Department of Basic Sciences, Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Nauni, Solan-173230, Himachal Pradesh, India ²ICAR-Central Potato Research Institute, Shimla- 171001, Himachal Pradesh <i>Email: prakritijhilta@gmail.com</i></p> |
| ICFBRO20 | <p>POLYHERBAL FORMULATION USED AS HERBAL TONIC FOR DIABETES Vanitha V. & Bhuvaneshwari M * Vivekanandha College of Arts & Sciences for Women (Autonomous), Elayampalayam, Tiruchengode, Namakkal. <i>Email: botanyvanitha@gmail.com</i></p> |
| ICFBRO21 | <p>ISSR MARKERS USING SEX IDENTIFICATION IN KIWIFRUIT (<i>ACTINIDIA DELICIOSA</i> (A. CHEV.) CF LIANG ET AR FERGUSON) GENOTYPES. Agrim Jhilta Himalayan Forest Research institute conifer campus, Panthaghatti Shimla-171009 (H.P) <i>Email: agrimjhilta@gmail.com</i></p> |

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| ICFBRO22 | <p>A NEAR ANALYTIC SOLUTION OF A STOCHASTIC IMMUNE RESPONSE MODEL CONSIDERING VARIABILITY IN VIRUS AND T CELL DYNAMICS</p> <p># Abhilasha Batra 1 and Rati Sharma 1,*</p> <p>Indian Institute of Science Education and Research (IISER) Bhopal</p> <p><i>Email: abhilasha19@iiserb.ac.in</i></p> |
| ICFBRO23 | <p>ISOLATION AND CHARACTERIZATION OF MARINE PROBIOTICS AND EVALUATION OF THEIR PROPHYLACTIC POTENTIALS IN EXPERIMENTAL COLORECTAL CARCINOGENESIS</p> <p>Dr. Nannu Shafakatullah</p> <p>Department of Bio-Sciences, Mangalore University, Mangalagangothri-574199, Karnataka, India.</p> <p><i>Email: shafakhath@yahoo.com</i></p> |
| ICFBRO24 | <p>RELATION BETWEEN ENVIRONMENTAL SCIENCE AND ENGINEERING</p> <p>Samiya Khan</p> <p>Lecturer, S.S. Jain Subodh Girls PG College Sanganer, Jaipur, India.</p> <p><i>Email: ailtosamiya@gmail.com</i></p> |
| ICFBRO25 | <p>ANALYSIS OF IMMUNE-INDUCED ANTIMICROBIAL PEPTIDES AND THEIR ASSOCIATION WITH NEGATIVE GEOTAXIS IN <i>DROSOPHILA MELANOGASTER</i> AND <i>DROSOPHILA ANANASSAE</i></p> <p>MeghashreeR. Naik & Nagaraj K*</p> <p>Research scholar, Department of Applied Zoology, Kuvempu University, Shankaraghatta, Shivamogga, Karnataka, India, 577451.</p> <p>E-mail: <i>meghanaik1992@gmail.com, knagarajv@gmail.com*</i></p> |
| ICFBRO26 | <p>A REVIEW ON PATHOBIOLOGY OF SARS COV-2</p> <p>Ishita Bhattacharya*, Sana Tarannum, Ashtosh Kumar, KumariShristy, Gopal Kumar Prasad, Navita Gupta</p> <p><i>Department of Life Sciences, BinodBihariMahtoKoyalanchal University, Dhanbad 828 130</i></p> <p><i>Email: ibhattacharya222@gmail.com</i></p> |

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| ICFBRO27 | <p>INCIDENCE OF <i>rs10818854</i> DENND1A SINGLE NUCLEOTIDE POLYMORPHISM IN POLYCYSTIC OVARY SYNDROME (PCOS) PATIENTS OF SOUTH TAMIL NADU, INDIA</p> <p><i>Email: sathish2128398@gmail.com</i></p> |
| ICFBPO28 | <p>ACRYLAMIDE: BYPRODUCT OF OUR MODERN FOOD HABITS</p> <p>Renu Sharma S. S. Jain Subodh Girls College, Sanganer, Jaipur <i>Email: renugovind1982@gmail.com</i></p> |
| ICFBPRO29 | <p>CRYSTAL STRUCTURE OF MALATE DEHYDROGENASE FROM <i>TRYPANOSOMA CRUZI</i></p> <p>Ravi R. Sonani¹, Katarzyna Kurpiewska², Krzysztof Lewiński², Grzegorz Dubin^{1,#} ¹Malopolska Centre of Biotechnology, Jagiellonian University, Gronostajowa 7a, 30-387 Krakow, Poland ²Department of Crystal Chemistry and Crystal Physics, Biocrystallography Group, Faculty of Chemistry, Jagiellonian University, Gronostajowa 2, 30-387 Krakow, Poland <i>Email: ravi123sonani@gmail.com</i></p> |
| ICFBPRO30 | <p>PHYTOCHEMICALS EFFICACY AS AN ANTI-INFECTIOUS AGENTS: A REVIEW</p> <p>Mahima Sharma Department of Zoology, S. S. Jain Subodh Girls College, Sanganer, Jaipur <i>email: mahima.sharma06@gmail.com</i></p> |
| ICFBPRO31 | <p>CHARACTERIZATION OF HEAVY METAL DEGRADING BACTERIA ISOLATED FROM HEAVY METAL CONTAMINATED SOIL LOCATED IN JHARKHAND AND EVALUATION OF THEIR ANTIBIOTIC AND HEAVY METAL RESISTANCE</p> <p>Amita Singh¹, Debasish Sahoo², Virendra Vaishnav³ ¹PhD Scholar, Singhanian University, Rajasthan ^{2,3}Department of Biotechnology, Chhattisgarh Swami Vivekanand Technical University Bhilai, Chhattisgarh, INDIA *Corresponding author Email – amitasingh419@gmail.com</p> |
| ICFBR)32 | <p>FOLIARAPPLICATIONS OF SALICYLIC ACID AND ASCORBIC ACID ALLEVIATES NaCl TOXICITY BY ENHANCING GROWTH AND PIGMENT COMPOSITION OF <i>VIGNA UNGUICULATA</i> (L.) WALP</p> |

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| | <p>*1Reyaz AhmadMirand2Dr. R. Somasundaram Ph.D. Research Scholar, Dept. of Botany, Annamalai University , Annamalai Nagar-608 002 TamilNadu, India. E.mail: reyazmaqbool07@gmail.com</p> |
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Poster Presentation

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| ICFBRP01 | <p>ASSESSMENT OF THE POTENTIAL TOXIC EFFECTS OF AN INSECTICIDE SELECTIVE (ALPHYTHRINE) ON PHYSIOLOGICAL RESPONSES, BIOCHEMICAL AND ENZYMATIC OF A BIOLOGICAL MODEL OF FRESHWATER : DAPHNIA MAGNA</p> <p>Kadjouh Oussama Sofiane, AzzouzZoubirand Djebbar Mohamed Reda</p> <p><i>Email: oussof.kad@gmail.com</i></p> |
| ICFBRP02 | <p>SEQUENCE ANALYSIS AND q-PCR STUDIES OF AQUAPORIN GENE IN TWO VARIETIES OF PADDY</p> <p>Rincy Susan Raju</p> <p>Department of Biotechnology and Biochemical Engineering, Sree Buddha college of Engineering, Pattoor, Kerala</p> <p><i>Email : rincybiotech@gmail.com</i></p> |
| ICFBRP03 | <p>COMPARATIVE STUDY OF CALLUS INDUCTION IN THE FLORAL AND THE VEGETATIVE PARTS OF CRATAEVA NURVALA</p> <p>Anisha Roy</p> <p><i>Email: anuanamikaroy95@gmail.com</i></p> |
| ICFBRP04 | <p>DEVELOPMENT OF BIOELICITORS FOR MITIGATING THE TERMINAL HEAT STRESS AND ENHANCING THE NUTRITIONAL DENSITY OF WHEAT: A NOVEL APPROACH FOR THE DEVELOPMENT OF ‘CLIMATE-SMART’ CROP</p> <p>Shreya Mandal</p> <p><i>Email: shreyamandal1008@gmail.com</i></p> |
| ICFBRP05 | <p>CONSERVATION OF <i>SPIRANTHES SINENSIS</i>, A MEDICINAL ORCHID</p> |

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| | <p>C Ravi Kant <i>Email: ravi.puchd@gmail.com</i></p> |
| ICFBRP06 | <p>THE STUDY OF MEDICINAL POTENTIAL PLANT OF <i>ANISOMELES MALABARICA</i> (L.) R. Br. Nanditha.Vand Muthuselvam.D <i>Email: nandithavijayarangan29@gmail.com, msbhcbot@gmail.com</i></p> |
| ICFBRP07 | <p>ENVIRONMENTAL MANAGEMENT THROUGH GREEN TECHNOLOGY Nithya, J and T. Vaithyanathan <i>Email: nnathiya443@gmail.com</i></p> |
| ICFBRP08 | <p>PURPLE SWEET POTATO: AN ANTHOCYANIN RICH PLANT WITH MULTIPLE BENEFITS Swati goyal and Shalini Sharma Department of Biotechnology and Microbiology, Meerut Institute of Engineering and Technology, Meerut <i>Email: swatigoyal790@gmail.com</i></p> |
| ICFBRP09 | <p>THE LIVESTOCK INDUSTRY HAS NUMEROUS AND DIVERSE IMPACTS ON THE ENVIRONMENT Shalini, E and Senthilkumar, M ¹PG and Research Department of Botany, Vivekanandha College of Arts and Sciences for Women (Autonomous), Elayampalayam - 637 205, Tiruchengode, Namakkal, TN, India. ² Assistant Professor, Department of Botany, Vivekanandha College of Arts and Sciences for Women (Autonomous), Elayampalayam - 637 205, Tiruchengode, Namakkal, TN, India. <i>Email: drmsenthilkumar@vicas.org</i></p> |
| ICFBRP10 | <p>CONSERVATION STRATEGY ON <i>BORASSUS FLABELLIFER</i> L. Santhiya. R, T. Vaithyanathan& M. Bhuvaneswari PG and Research Department of Botany, Vivekanandha College of Arts and Science For Women (Autonomous), Elayampalayam, Tiruchengode. <i>Email: santhiyarajkumar62@gmail.com</i></p> |
| ICFBRP11 | <p>BIOSURFACTANTS-AN ALTERNATIVE FOR BIOREMEDIATION: A REVIEW Vandita Sharma (Asstt Professor), Yashi Rathi and Shikha Kumari. Department of</p> |

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| | <p>Biotechnology and Microbiology. Meerut Institute of Engineering and Technology, Meerut. <i>Email: vandita.sharma@miet.ac.in</i></p> |
| ICFBRP12 | <p>CAR T CELL THERAPY: GENETICALLY ENGINEERED T CELL AS A NEW ERA IN IMMUNOTHERAPY TO TREAT CANCER</p> <p>Rochana Pramanik Department of Physiology, University of Calcutta <i>Email: rockingrochana@gmail.com</i></p> |
| ICFBRP13 | <p>INNOVATIVE WAYS TO REDUCE GLOBAL WARMING</p> <p>R.Vaisnavi & M.Bhuvaneshwari Vivekanandha College of Arts and Science For Women (Autonomous), Elayampalayam, Tiruchengode. <i>Email: rvaisnavi2001@gmail.com</i></p> |
| ICFBRP14 | <p>PROBIOTIC THERAPY</p> <p>Marriam Deganiand, Sourabh Santosh Gurav Department of Pharmaceutical Sciences, Institute of Chemical Technology, Mumbai <i>Email: bpt20ss.gurav@pg.ictmumbai.edu.in</i></p> |
| ICFBRP15 | <p>ANTIMICROBIAL ACTIVITY OF SANSEVIERIA ROXBURGHIANA (DRACANACEAE):- A SUPERIOR ORNAMENTAL PLANT</p> <p>Nilesh Naskar, Soumyadip Halder, Subhadip Bhowmik School of Pharmacy, The Neotia University, Jhinga, Sarisa, Diamond Harbour Road, 24 Parganas(South), West Bengal – 743368 <i>Email: soumyadiphald3r2001@gmail.com</i></p> |
| ICFBRP16 | <p>A PHYTOPHARMACOLOGICAL REVIEW ON ALOE BARBADENSIS (PIPERACEAE): THE KING OF SPICES</p> <p>Soumyadip Halder, Subhadip Bhowmik, Nilesh Naskar School of Pharmacy, The Neotia University, Jhinga, Sarisa, Diamond Harbour Road, 24 Parganas (South), West Bengal – 743368 <i>Email: subhadip01bhowmik@gmail.com</i></p> |
| ICFBRP17 | <p>VIRUS BEHIND INFERTILITY IN WOMEN (HUMAN HERPES VIRUS):-A NOVEL HUMAN PATHOGEN</p> <p>Subhadip Bhowmik, Nilesh Naskar, Soumyadip Halder</p> |

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| | <p>School of Pharmacy, The Neotia University, Jhinga, Sarisa, Diamond Harbour Road, 24 Parganas(South), West Bengal – 743368</p> <p>Email: nileshnaskar01@gmail.com</p> |
| ICFBRP18 | <p>MEDICINAL PLANTS IN THE SELECTED URBAN AREAS OF KRISHNAGIRI DISTRICT, TAMILNADU</p> <p>Harini. N and C. Anbarasu</p> <p>PG and Research Department of Botany, Vivekanandha College of Arts and Science For Women (Autonomous), Elayampalayam, Tiruchengode.</p> <p>Email: harinikuttii@gmail.com</p> |
| ICFBRP19 | <p>HISTOPATHOLOGICAL STUDIES ON <i>RIVEA HYPOCRATERIFORMIS</i> (DESR.) CHOISY.</p> <p>Iswarya S and Mary Kensa V</p> <p>Research Scholar (Full time), Reg: No: 20113152262022,</p> <p>Email Id: iswaryaselvaraja@gmail.com,</p> <p>**PG Research Centre of Botany, S.T. Hindu College, Nagercoil,</p> <p>Email Id: surejkensa@gmail.com</p> |
| ICFBRP20 | <p>SIGNIFICANCE OF PLANT GROWTH PROMOTING RHIZOBACTERIA (PGPR)</p> <p>Mohd Zishan</p> <p>Sharda University, Greater Noida, India</p> <p>Email: zishanmohd357@gmail.com</p> |
| ICFBRP21 | <p>SEASONAL VARIATION OF PHYSICO-CHEMICAL PARAMETERS AND FISH DIVERSITY OF MAN RIVER OF DHAR DISTRICT, M.P. (INDIA)</p> <p>JyotiRawal, Rekha Sharma</p> <p>Department of Zoology, Govt. Holkar Science College, Davv Indore</p> <p>Email: jyotirawal87@gmail.com</p> |
| ICFBRP22 | <p>ORGANIC FARMING GREEN VEGETABLES CULTIVATIONS - A SYSTEM APPROACH TO MEET SUSTAINABILITY CHALLENGE</p> <p>Revathy, R and Kannan, M.</p> <p>PG & Research Department of Botany, Vivekanandha College of Arts and Sciences for</p> |

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| | <p>Women (Autonomous), Tiruchengode – 637 205, Tamil Nadu, India</p> <p>Email: drmkannan@vicas.org</p> |
| ICFBRP23 | <p>EVALUATION OF PHYTOTOXIC AND CYTOTOXIC POTENTIAL OF ESSENTIAL OIL OF VITEXNEGUNDO L.</p> <p>MohdIssa, Harminder Pal Singh, Daizy R. Batish</p> <p>¹Department of Environment Studies, Panjab University, Chandigarh-160014</p> <p>²Department of Botany, Panjab University, Chandigarh-160014</p> <p><i>Email: issaenvs@gmail.com</i></p> |
| ICFBRP24 | <p>BIONANOTECHNOLOGY- A REVIEW</p> <p>D.REIYA BOSCO</p> <p>Department of Biotechnology, St. Joseph’s College (Autonomous), Tiruchirappalli-620002, Tamilnadu, India.</p> <p>Email : <i>reiyabosco577@gmail.com</i></p> |
| ICFBRP25 | <p>DOCUMENTATION REVIEW FOR BORASSUS FLABELLIFER</p> <p>Santhiya. R , Dr. T. Vaithyanathan * & Ms. M. Bhuvaneshwari*</p> <p>PG and Research Department of Botany, Vivekanandha College of Arts and Science For Women (Autonomous), Elayampalayam, Tiruchengode - 637205. Namakkal District, Tamil Nadu, India.</p> <p>Email: <i>santhiyarajkumar62@gmail.com</i></p> |

Oral Presentaion

ICFBRO01

HYDRO BASE CULTURE – A NOVEL ALTERNATIVE SOURCE FOR GROWING CROPS WITHOUT SOIL

Surya A and Kannan M.*

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Nowadays Soil based agriculture is facing some major challenges with the advent of civilization all over the world, such as decrease per capita land availability. Apart from this, due to modernization as well as threats from climate change and its related adverse effect, the land cultivation is going to further facing challenging threats. Under such situation, in the near future it becomes convoluted to feed the entire population using the production from soil field system. Naturally, soil-less culture is becoming more relevant in the present scenario, to cope-up with these challenges. Plants need support, nutrients, protection from adverse temperatures, an even supply of moisture, and they need oxygen around the roots. It is possible to provide these necessary components for plant growth without soil. “HYDROPONICS” is the growing of plants in a liquid nutrient solution with or without the use of artificial media. There's no mention of "soil" anywhere in there and that's all the proof you need that plants can grow without it. What they do need is water and nutrients, both easily obtained from soil. But if they can get these things somewhere else say, by standing with their roots in a nutrient-rich solution they can do without soil altogether. The popularity of hydroponics has increased dramatically in a short period of time leading to an increase in experimentation and research in the area of indoor and outdoor hydroponic gardening. For successful implementation of commercial hydroponic technology, it is important to develop low cost techniques which are easy to operate and maintain; requires less labour and lower overall setup and operational cost. Plants grown hydroponically often yield more, require less space, and use less water than with conventional gardening. A hydroponic system also can be an ideal solution for apartment dwellers and urbanites who do not have an outdoor gardening plot.

KEYWORDS: Hydro culture, Inert medium, Without Soil, Outdoor gardening plot.

ICFBR02

ADVANCED BIO-INSPIRED DESIGNING APPROACHES OF NANOMATERIALS IN MEDICINE AND PHARMACEUTICALS WITH LESS TOXICITY & MORE EFFICACY AND THE IMPORTANCE OF NANOPARTICLES (NANOTECHNOLOGY) FOR THE THERAPEUTICS & EARLY DIAGNOSIS OF ALZHEIMER'S DISEASES & ITS APPLICATION IN BIOMEDICAL FIELD.

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Nanotechnology has a significant impact on medicine in recent years, its application is referred to as Nano medicine. Nanoparticles have certain properties with biomedical application. Nanomaterials have unusual mechanical, optical, electrical & chemical behaviors, these are widely used in medicine and pharmaceutical for detection of biological molecules, imaging of diseases, demonstrate cell toxicity. Alzheimer's disease (AD) is an incurable and highly debilitating condition characterized by the progressive degeneration and death of nerve cells, which leads to manifestation of disabilities in cognitive functioning. The most commonly used hypothesis to describe the pathophysiology of AD is amyloid Cascade Hypothesis saying that the A β aggregation is the major contributor leading to progressive neurodegeneration in AD. In recent years, the development of biosensors for determination of AD's main biomarkers has made remarkable progress, particularly based on the tremendous advances in nanoscience and nanotechnology. Bio-Inspired Design or Bioinspiration is the development of novel materials, devices, and structures inspired by solutions found in biological systems and biological evolution and refinement which has occurred over millions of years. A fluorescent nanoparticle for detecting markers and a novel kit for the early diagnosis of

AD. The kit consists of a probe molecule comprising an oligonucleotide capable of detecting one or more AD-specific microRNAs (miRNAs) and biomarkers related to AD.

The aim of this study is to highlight the role of nanoparticles in early detection of AD, effective drug targeting to brain and theranostic (diagnosis and therapy) approaches in AD's management. Some applications of nanomaterials are fluorescent biological labels, drug & gene delivery, bio detection of pathogen and proteins, tissue engineering etc. Nanomaterials may agglomerate in vitro or in vivo and may chemically degrade. It is used in cancer photodynamic therapy, where the Au particle is inserted within tumor in the body and is illuminated with light from the outside.

Applications of nanotechnology in AD therapy including neuroprotections against oxidative stress and anti-amyloid therapeutics, neuroregeneration and drug delivery beyond the blood brain barrier (BBB) are discussed and analyzed. Nanoparticles offer the opportunity to design smart therapeutics carriers that can simultaneously cross the BBB and deliver the payload to the specific targets. The technology has recently offered some anti-amyloid neuroprotective approaches against the cellular and synaptic toxicity of oligomeric and fibrillar (polymeric) A β species.

Nanotechnology encompasses a recent and overwhelming group of atomic- and molecular-based techniques capable of arranging atoms and molecules in specially designed and controlled positions. Nanomaterials represent promising tools in reversing multi-drug resistance (MDR) effect in cancer cells. MDR refers to the ability of tumor cells to survive or become resistant to the treatment of a wide variety of drugs. Nanopharmaceuticals field gains a new player through these bio-inspired materials, by the platforms that are being developed. The final goal in nanomedicine is to realize safe and effective therapy and, if possible, align to the tailor-made drugs in personalized medicine.

Key words: Nanotechnology, Nano medicine, cancer photodynamic therapy etc.

ICFBRO03

PHYTOREMEDIATION THROUGH ORNAMENTAL PLANTS AS AN ECOLOGICAL METHOD FOR IN SITU CLEAN UP OF HEAVY METALS OF CONTAMINATED SOIL

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Because of the unregulated use of sewage sludge, compost, mining waste and chemical fertilizers, heavy metals are among the most common forms of pollutants in agricultural soils. Excessive accumulation of heavy metals that do not degrade over time adversely affects crop yields. The excess of heavy metals in the soil also poses a significant danger to plant and animal health through their entry into the food chain. There are many chemical and physical methods used for remediation of contaminated soil but they are very costly, phytoremediation is a cost effective in-situ process by which green plants are used for remediation of contaminated soil. Phytoremediation by using ornamental plants is more acceptable because mostly ornamental plants are non edible so the heavy metal does not enter in to the food chain.

Key words: Pollutants, heavy metals, phytoremediation, cost effective, ornamental plants.

ICFBRO04

NITROGEN DOPED NICKEL COBALT OXIDE NANOFLOWER AS AN EFFICIENT CATHODE CATALYST FOR MICROBIAL FUEL CELL

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Microbial Fuel Cells (MFCs) are an alternative sustainable approach that utilize bacteria present in waste water as a bio-catalyst for the production of energy[1]. It is a promising growing technology with minimal prerequisite for chemical supplements. The present study represents implementation of nitrogen doped Nickel cobalt oxide (N-NC)nanoflowers as an efficient cathode catalyst for MFCs. The presence of nitrogen in the nanostructure generated active sites for the electrocatalytic activity. Time dependent experiments were performed to understand the morphological evolution and its effect on the electrocatalytic activity and the performance of MFC. The alignment of flakes in a flower like morphology increased the surface area and porosity, allowing easy diffusion of ions and thereby giving a superior power density of 2784mWm^{-2} and the maximum open-circuit potential of 0.89 V. Electrocatalytic stability of N-NC was compared with Pt by

performing the poisoning tests with methanol and sulphate. The results endow N-NC as a potent ORR cathode catalyst for MFCs with a remarkable electrocatalytic activity and robust stability.

Keywords- Microbial Fuel Cell, Cathode catalyst, Nickel cobalt oxide.

ICFBRO05

CHARGE & HYDROPHOBICITY BASED CLUSTERING OF MAMMALIAN RHODOPSIN

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Rhodopsin is the visual pigment found in rod photoreceptors of retina. In this present study sequence homology of 500 mammalian rhodopsin based on charge and hydrophobicity was analyzed. Using Human rhodopsin as reference, 500 homologous sequences from various mammalian species were collected by BLAST homology search. R programming language was used to create histograms for depicting grouping of protein molecules into different levels of charges and hydrophobicity. More than 200 sequences showed positive charge ranging from 5 to 10. Around 180 sequences pellucidly showed negative charge. The minimum charge was found to be -4.43106756. Approximately 300 sequences showed a hydrophobicity of 0.4 to 0.5, to water, in the hydrophobicity scale. Multiple sequence alignment with all 500 sequences was carried out in Clustal Omega using default parameters. Phylogenetic tree was constructed and 14 clusters were observed. From the obtained phylogenetic tree, similarity between certain species were deciphered based on their charge and hydrophobicity. Similar sequences can be clustered according to physicochemical parameters. Empirical relationship between sequences is assessed by sequence similarity. The most significant objective of sequence similarity calculations is establishing the likelihood for sequence homology. Many implementations for measuring sequence similarity exist. Hydrophobicity based clustering is one of the interesting approaches to extract meaningful evolutionary information from sequence similarity. From similar charge and hydrophobicity values it is inferred that the rhodopsin sequence of Homo sapiens is closely related to the sequences of the organisms Pan paniscus, Nomascus leucogenys, Gorilla gorilla gorilla, Pan troglodytes and Pongo abelii. These biochemical properties help us find out the pattern of genetic divergence among these organisms. From the phylogenetic tree it is inferred that Homo sapiens and

Pongo abelii have the maximum sequence homology. This analysis helps us investigate the lineage of the protein rhodopsin and its evolution. Further studies with this knowledge on the evolution of rhodopsin and its homology can be used to understand the dynamics of rhodopsin-related diseases such as Leber congenital amaurosis, congenital night blindness, and retinitis pigmentosa

ICFBRO06

EFFECT OF LOW NITROGEN ON CHLOROPHYLL FLUORESCENCE REGULATION IN COORDINATION WITH NET PHOTOSYNTHESIS AND RUBISCO EFFICIENCY OF RICE

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Nitrogen is the basis of plant growth and development and, is considered one of the priming agents to elevate a range of stress. Plants use solar radiations through photosynthesis, which amasses the assimilatory components of crop yield and to meet the global demand for food. Nitrogen is the main regulator in the allocation of photosynthetic apparatus which changes off the net photosynthesis (P_n) and quantum yield (F_v/F_m) of the plant. In our study, nitrogen (N) supply depicts dynamic of photosynthetic establishment and its dependent-relation with chlorophyll fluorescence attributes and Rubisco efficacy during N-stress conditions, which has not been reported to date. Two contrasting rice genotypes, N-tolerant (CR Dhan 311) and N-sensitive (Nidhi) were evaluated, under low- and high-N conditions. We found that the stored-N of the leaf decreases in stress conditions and rebelled the plants P_n and F_v/F_m efficiency control by depleting the Rubisco activity and content. P_n and F_v/F_m follows the parallel trend of N-content during stress conditions along with depletion of intercellular CO_2 concentration and overall conductance under N-stress. Photosynthetic saturation curve cleared abrupt decrease of effective quantum yield in N-sensitive rice genotype than tolerant one. Also the rapid light curve highlighted the unacclimated regulation of photochemical and non-photochemical quenching in stress condition. N-sensitive genotype triumphed non-photochemical quenching whereas, the tolerant one raised gradually during light curve. Our study suggests that the quantum yield is the key limitation for net photosynthesis during N-stress. Regulation of Rubisco, photochemical and non-photochemical

quenching may help plants to develop in N-stress, which is need of the hour for agricultural sustainability to cope-out the photosynthetic efficiency of the rice plant.

Keywords: net photosynthesis; nitrogen; quantum yield; rapid light curve; rice (*Oryza sativa*).

ICFBRO07

NANOTECHNOLOGY IN THE FIELD OF MEDICINE

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Nanotechnology is the study of controlling and manipulating matter on an atomic and/or molecular scale. It deals with structures the size of 100 nanometers or smaller in atleast one dimension. A disruptive technology with a potential to change the world as we know it today. It's a very diverse technology. Nano medicine is an interdisciplinary field of science, even a simple project needs contribution from physicians, engineers, material chemists, biologists and end users such as orthopedic surgeon. Molecular nano -technology and molecular manufacturing are key enabling technologies. Nanotechnology can deliver medicine or drugs into specific parts of the human body, thereby making them more effective and less harmful to the other parts of the body. With nanotechnology, minute surgical instruments and robots can be used to perform microsurgeries on any part of the body. Instead of damaging a large amount of the body, these instruments would be precise and accurate, targeting only the area where surgery should be done. Nanotechnology can be used in many fields of medicine such as pharmacy, cancer, diagnosis and surgery. Nanopharmacy helps in increasing the bioavailability of the drug and the distributions. It increases the solubility of the drug. Future, medical nanotechnology expected to employ nanorobots injected into the patient to perform treatment on a cellular level. Tissue engineering could be done using nano-materials and makes use of artificially stimulated cell proliferation by using suitable nanomaterial based scaffolds and growth factors. Advances in nanotechnology based tissue engineering could also lead to life extension in humans and other animals.

Keywords: Nanotechnology, Tissue engineering, Nano medicine, Molecular

PHYTOCHEMICAL AND INVITRO STUDIES FOR HYDRO-ALCOHOLIC EXTRACT FROM FRUIT SAMPLE (EPICARP& ENDOCARP) AND ESTERIFIED EXTRACT FROM ENDOPHYTIC FUNGUS ASSOCIATED WITH LEAVES OF *ELAEOCARPUSGANITRUS* (RUDRAKSHA) AND GREEN SYNTHESIS OF SILVER NANOPARTICLES FROM THE EXTRACTS.

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Present study is based on the Qualitative analysis of different phytochemical, Quantitative estimation of Flavonoids, Phenolics and Tannin, In-vitro analysis such as antimicrobial, antioxidant properties and anti-inflammatory activity, green synthesis of silver nanoparticles from the extracts and characterization and study of their antimicrobial activity was studied.. Rudraksha whole fruit were purchased from authenticate Rudraksha seller at Nagpur. The Epicarp and Endocarp of the Rudraksha fruit were isolated, dried in shade to reduce the moisture, milled into powder form to reduce size and was stored in zipper pouch. Hydro-alcoholic (49% ethanol and 51% water) extract by solvent extraction was carried out for Epicarp and Endocarp of Rudraksha fruits with plant material to solvent in the ratio of 10:1 respectively and after 48hours, the mixture was filtered and the filtrate was collected as crude plant extract. Endophytic Fungus was isolated from young disease free leaves by Water agar (16%) media and the metabolites were isolated by culturing the endophytic fungus in Potato dextrose broth (pH-5.9, 30°C ,70 r.p.m. / min) and after incubation for about 10 days, the extract was extracted out using ethyl acetate (organic top layer), then dried using Vacuum evaporator. The hydro-alcoholic extract of Epicarp and Endocarp and esterified extract of endophytic fungus were

reconstituted to final concentration of 1mg/ml by dissolving dried extract with Dimethyl Sulphoxide (DMSO).

Qualitative analysis for detection of various bioactive compounds, Quantitative estimation for Flavonoid (Aluminium chloride/colorimetric method), Phenol (Folin-Ciocalteu method) and Tannin (modified Folin-Ciocalteu method) was carried out using standard calibration curve of Quercetin(QE), Gallic acid(GA) and Tannic acid(TA) respectively. Antimicrobial assay, Anti-oxidant assay (DPPH method) and anti-inflammatory assay (inhibition of albumin denaturation) was also studied. Screening was done for synthesis of silver nanoparticle from with association with crude hydro-alcoholic Epicarp and Endocarp and endophytic fungus.

The Qualitative analysis of phytochemicals for hydro-alcoholic extract of Epicarp and Endocarp of Rudraksha contained Alkaloids, Flavonoids, Phenols, Tannins, Terpenoids, Saponins, Steroids, Glycosides, Carbohydrates and fixed oil. Proteins and amino acids were absent. The esterified extract of endophytic fungus isolated from Rudraksha plant contain Flavonoids, Phenols, Tannins, Saponins, Steroids, Carbohydrates, Glycosides and Amino acids. Quantitative estimation for Total Flavonoid content (μg Quercetin QE/mg extract), Total Phenolic content (μg Gallic acid GA/mg extract) and Total Tannin content (μg Tannic acid TA/mg extract) for hydro-alcoholic extract of Epicarp, hydro-alcoholic extract of Endocarp and esterified extract of endophytic fungus were found to be $17.166\pm 0.005\mu\text{gQE/mg}$ extract, $23.344\pm 0.023\mu\text{gQE/mg}$ extract and $9.045\pm 0.013\mu\text{gQE/mg}$ extract respectively; $12.726\pm 0.018\mu\text{gGA/mg}$ extract, $7.087\pm 0.023\mu\text{gGA/mg}$ extract and $3.043\pm 0.008\mu\text{gGA/mg}$ extract respectively; $3.097\pm 0.027\mu\text{gTA/mg}$ extract, $1.192\pm 0.077\mu\text{gTA/mg}$ extract and $0.679\pm 0.087\mu\text{gTA/mg}$ extract. The concentration of standard and test was calibrated to 0.1mg/ml for antioxidant assay, anti-inflammatory assay. Antioxidant assay was carried out using DPPH (2,2-diphenyl-1-picryl-hydrazyl-hydrate) reagent, calculating the percentage of inhibition by reduction in absorbance of test sample and Ascorbic acid as standard. The percentage of inhibition for standard ascorbic acid was $89.65\pm 0.07\%$ whereas percentage of inhibition for hydro-alcoholic extract of Epicarp, hydro-alcoholic extract of Endocarp and esterified extract of endophytic fungus found $53.07\pm 0.07\%$, $41.45\pm 0.06\%$ and $62.77\pm 0.11\%$ respectively. Anti-inflammatory activity was studied using Indomethacin as standard. The anti-inflammatory activity for standard was $71.76\pm 0.25\%$. The anti-inflammatory activity for hydro-alcoholic extract of Epicarp, hydro-alcoholic extract of Endocarp and esterified extract of endophytic fungus were found to be $33.29\pm 0.06\%$, $48.65\pm 0.25\%$ and $28.75\pm 0.75\%$ respectively. The hydro-alcoholic extract of

Epicarp, hydro-alcoholic extract of Endocarp and esterified extract of endophytic fungus had antimicrobial activities against pathogens such as *E.coli*, *Staphylococcus* and *Pseudomonas sp.* Screening for production of silver nanoparticles from elemental silver nitrate solution detected by change in color to brownish to reddish brown in color. Hydro-alcoholic extract of Epicarp, and Endocarp showed positive for synthesis of nano-particles further confirmed by spectrophotometric analysis. Antimicrobial activity for the extract-Ag nanoparticles show increase in antimicrobial activity.

Rudraksha as a whole has been proved to be miracle tree, exploring new prospect in extraction, purification, analysis and down-stream process can give new insight to new drug chemistry and pharmacological aspects.

Keywords: Rudraksha, Antimicrobial assay, Antioxidant assay, Anti-inflammatory assay, Silver nanoparticles

ICFBRO09

GENOMICS AND MOLECULAR BREEDING FOR COOKING QUALITY IN SOFT RICE

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Assam, a state of North Eastern India is the source of highly diverse of rice varieties with unique cooking and eating quality, among these one of the famous traditional rice product of Assam is Komal chaul or soft rice. Soft rice often called magic rice is a special ready to eat product because it needs no cooking and we can consumed after soaking in cold or lukewarm water. Milled rice content almost 90% starch and starch is composed of amylose and amylopectin, among this amylose is the main determinant of cooking time in rice. Cooking time can be estimated by gelatinization temperature (GT). Granule bound starch synthase (GBSS) encoded by Waxy locus has major role in determining the amylose content and also gelatinization temperature. In this study we focus on major biochemical test related to cooking time of 22 bora rice lines of Assam (amylose content, amylopectin content, total starch content, gelatinization temperature and cooking time in room temperature) as well as sequence diversity and genotyping with trait linked molecular marker. During grain developmental stage, real time expression study was performed with major genetic loci responsible for starch synthesis in

comparison to normal improved rice. In order to introgress the soft trait in to normal high yielding rice, molecular breeding was performed. Study showed that low amylose and high amylopectin with short cooking time, which was supported by low GT was common in soft rice in comparison to normal rice. A number of single nucleotide polymorphism (SNPs) was detected through bioinformatics analysis of sequencing data. Differential expression analysis of GBSS I and others genetic loci by the help of RT PCR, showed marked differences with normal rice. As a result of hybridization, hybrid rice population showing combine characters of parental lines, as well as high yielding soft rice with short day of flowering. This preliminary biochemical and molecular diversity study showed that, they are unique in cooking behavior and also great source of unique genetic reservoir for breeding to save the fuel cost and also to ensure food security in extreme environment.

Key words: Soft rice, amylose content, cooking time, SNP, RT PCR, Molecular breeding.

ICFBRO10

***IN VITRO* INHIBITORY EFFECTS OF *BOERHAVIA DIFFUSA* ON FREE RADICALS & α -GLUCOSIDASE**

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Boerhavia diffusa L. a perennial creeping herb belongs to the family *Nyctaginaceae*. It is known as 'Punarnava' in the Indian system of *Ayurveda* medicine. *B. diffusa* is one of the renowned Indian medicinal plants used to treat large number of human ailments as mentioned in *Charaka Samhita*, and *Sushrita Samhita*. In folk medicine, *B. diffusa* used to treat wound, inflammations, hypertension, dyspepsia, jaundice etc. Phytochemical studies proven that *B. diffusa* plant contains a large number of flavonoids, rotenoids, alkaloids, steroids, triterpenoids, lipids, lignins, carbohydrates, proteins, and glycoproteins etc. Due to the presence of bioactive constituents *B. diffusa* exhibit pharmacological activities such as immunosuppressive activity, antimetastatic activity, antioxidant activity, antidiabetic activity, antiproliferative and antiestrogenic activity, analgesic and anti-inflammatory activity, antibacterial activity, nitric oxide scavenging activity. Our present study

focused to investigate the *in vitro* DPPH radical scavenging and α -Glucosidase inhibition potency of *B. diffusa* aerial part extractives in several solvent systems. In this aqueous methanol extracts exhibit highest inhibition efficiency against both DPPH radicals and α -Glucosidase. The current study revealed that the extracts of *B. diffusa* had significant antioxidant and anti-diabetic activities. Detailed bioactivity results will be discussed in presentation.

ICFBRO11

REGULATION OF DROUGHT TOLERANCE IN PLANTS BY A RICE LECTIN PROTEIN, r40c1

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Drought is an important environmental stress factor affecting the growth and production of agricultural crops worldwide, including rice. Rice lectin protein, r40c1 has been reported to be regulated by drought stress but the functional mechanism how the protein impart drought stress tolerance remains elusive. In this study, we showed that the *Osr40c1* gene expression was positively correlated with the degree of drought tolerance of different *indica* rice cultivars. We also found that the transgenic rice and tobacco harbouring *Osr40c1* overexpressing construct exhibited drought tolerance over wild type and vector control lines. Furthermore, several drought-responsive proteins like *OsSAM2*, *OsSAP8*, *OsMNB1B*, and *OsH4* were identified as the interacting protein partners of *Osr40c1* protein. Interestingly, it was also found that *Osr40c1* form a multi-protein complex with the interacting protein partners under drought stress to provide drought tolerance in rice plants. The virus induced gene silencing (VIGS) of each of these orthologues protein partners of *OsSAP8*, *OsMNB1B* and *OsSAM2* led to drought susceptibility in the otherwise tolerant transgenic tobacco plants. Collectively, these findings provide a novel insight into the drought tolerance mechanism of rice lectin protein, r40c1 protein *in planta*.

ICFBRO12

MOLECULAR CHARACTERIZATION AND PREVALENCE OF MACROLID, LINCOSAMIDE AND STREPTOGRAM B (MLS_b) RESISTANCE FROM NASAL CARRIAGE STAPHYLOCOCCUS AMONG HEALTH CARE WORKERS FROM KOLHAPUR, MAHARASHTRA, INDIA

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Clindamycin are commonly used for the treatment of severe Methicillin resistant Staphylococcal Infections. Inducible clindamycin resistant cannot be identified by standard methods of antibiotic susceptibility testing. D-test appears to be a reliable indicator MLBSi (Macrolid, Lincosamide and Streptogram B inducible resistant) strains. Genetic determinants conferring resistance to MLBSi are important for surveillance of antibiotic resistance.

Nasal swabs were collected from healthcare workers by using HI-sterile cotton swabs and transported to the laboratory with 5% BHIB salt broth. Isolation of staphylococci was done by using standard microbiological procedure. Antibiotic Susceptibility Testing, D-test and Methicillin resistant were screened by using Cefoxitin disc diffusion method as per CLSI guidelines 2020. Genotypic identification of MLS_b resistant was done by multiplex PCR.

400 nasal swabs were collected from healthcare workers. Of these, 184 *Staphylococcus aureus* and 136 coagulase negative staphylococci were isolated. Methicillin Resistant *Staphylococcus* (MRS) shown 81 (25.31%) isolates. Of these, 30 isolates found MRSA (9.35%) and 51 (15.95%) were MRCONS. The rate erythromycin is higher in MRS 52 (16.25%) isolates were found than MSS 29 (9.06%). D-test positive (MLS_{Bi}) were found 94 isolates (29.37%) more in MRS 62 (19.37%) isolates than MSS 32 (10%). 38(11.87%) isolates carried *ermC* gene, 12 (3.75%) isolates carried *msrA* gene and 26 (8.12%) isolates carried *ermA* gene.

The increasing prevalence of Methicillin-resistant *Staphylococcus* and the coresistance against other therapeutic options like erythromycin and clindamycin is becoming an obstacle in the treatment of infections which need attention from concerned bodies.

Keyword:- MRSA, MLSBi, Erythromycin

ICFBRO13

TARGETING EFFLUX PUMPS OF DRUG RESISTANT *ACINETOBACTER BAUMANNI* TO COMBAT EFFLUX MEDIATED DRUG RESISTANCE: COMPUTATIONAL APPROACH

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Acinetobacter baumannii has now emerged as a significant multi-drug resistant (MDR) nosocomial pathogen worldwide and it is found to associated with the hospital acquired infections. Drug resistance in *A.baumannii* may leads to serious health issues. Efflux mediated drug resistance is one of the most important mechanism behind this drug resistance and these efflux pumps are the actively involving in the extrusion of the antibiotics from inside to the outside of the bacterial cell. This makes the specific strains drug resistance. Hence in this study it is decided to predict the 3D structure of the CraA efflux pump through homology modelling (MODELLER 9.24) which is responsible for chloramphenicol resistance in *A.baumannii* and also previously identified as most frequently expressing efflux pumps in clinical isolates of *A.baumannii*. Here single template i.e., PDB ID: 4ZP0_A (multidrug transporter protein [MdfA] found in *E.coli*) was used for modelling which is obtained by performing PSI-BLAST. Then the structure was validated and it is energetically minimized for docking purpose. Molecular docking (PyRx tool) was performed to screen the compounds that binds to the binding pocket of the efflux pump because this will inhibit the activity of the pump through competitive inhibition. Top 10 compounds screened were tested for stability through Molecular Dynamics Simulation (LARMD tool) and interaction analysis. The PubChem IDs for the identified potent inhibitor candidate were [10206](#), [3503](#), [5281879](#) & [6852386](#). Drug viability of the compounds were also simulated (SWISS-ADME & admetsar tool). This analysis suggested that the compounds identified could be a viable drug due to it's properties like high gastrointestinal absorption, high bioavailability, non-substrate and inhibitor of Cytochrome P450 and non-carcinogenic. Structure identification of biological targets helps in targeted drug discovery and also identification of inhibitors

for efflux pumps will restore the efficacy of the already existing antibiotics as a result of synergic effect

ICFBRO14

ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS USED BY PANAMARATHU PATTI AND RURAL PEOPLE IN SALEM DISTRICT OF TAMILNADU, INDIA

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Medicinal plant species are precious and are used for production of several drugs. These plants are traditionally used to treat different ailments. The present investigation deals with the observations on ethnomedicinal uses of plant wealth of Salem district of Tamil Nadu. The study was mainly focused on gathering information on traditional uses of plants from tribals and rural peoples. Local inhabitants are extremely knowledgeable about the utilization of indigenous flora of the study region. Among the species like *Azadiracta indica*, *Gloriosa superba*, *Moringa olifera*, *Phyllanthus amarmus*, *Tridax procumbens* and *Vitex negundo* are widely used for the treatment of wounds, pressure ulcers, skin allergy and arthritis. In this present study, 59 plant species belonging to 53 genera from 28 families were included. The ethnomedicinal plants used by traditional users of Salem district are arranged alphabetically followed by scientific name, family name, vernacular name, used plant part (s), mode of preparation and medicinal uses are provided. Therefore, this work will also contribute for the investigate of new medicines and treatments.

Keywords: Ethnobotanical studies, Medicinal Plants, Panarmarathu Patti, Therapeutic purposes, Herbal medicine and Herbalism.

ICFBRO15

FLORISTIC STUDY OF MEDICINAL PLANTS IN MARUDHUR VILLAGE, KARUR DISTRICT, TAMIL NADU, INDIA

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Ethnobotanical survey was conducted in Marudhur village, Karur District. We identified various medicinal plants and it uses gathered under the knowledge from local people. In this present study we identified 65 medicinal plant species and they were belong to 33 families. The medicinal plant were arranged by Betham & Hooker classification. The maximum number of medicinal plants belong to family Fabaceae . The plants were mostly used to cure common disorders like fever, common cold, cough, asthma, rheumatism, jaundice, ulcers, headache, stomach problem, diarrhea, diabetes, wounds, skin problem, piles etc. Above plant species are useful to identify new drugs to the society. So, this present study used to promote the herbal medicine utilization among the people.

Key words: Ethnobotany, medicinal plants, drugs, disorders.

ICFBRO16

EFFECT OF SELECTED PLANT DYES ON FABRICS

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Dye is a colored substance used to apply on the fabrics either chemical or pigments from plants or animals. Pigments from plants are natural product and eco- friendly. We have chosen plant based pigment to apply in the clothes .Plant such as *Curcuma longa* ,*Millingtonia hortensis*, *Beta vulgaris*, *Punicagranatum*, *coffea arabica* caused for my for my present study to enhance the plant based natural dye for natural cloth. Natural dye will prolong the quality of cloth and good for human health. This study will helpful for all textile industries to promote natural way of dyeing on the

fabrics. Environmental pollution also reduce this kind of dyeing. Economically and eco- friendly useful to our society.

Keywords : Pigments, Fabrics, textile, Economical & eco - friendly

ICFBRO17

PROCESS OPTIMIZATION FOR THE EXTRACTION OF LOW COST AND ECO-FRIENDLY FOOD COLOURANT FROM FLOWER PETALS – A GREEN APPROACH

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“Food coloring is employed each in industrial food production and in domestic preparation. Food colorants also are employed in a range of non- food applications together with cosmetics, prescription drugs, home craft comes, and medical devices. Chemical synthesized food colorant imparts associate intense, uniform color, area unit less costly and mix a lot of simply to make a range of hues. The natural food colorants area unit from plant or microbial origin which has vegetables, animal, bacterial, fungal, etc., The foremost wide used carotenoids in food business together with carotenoid, lycopene, lutein, zeaxanthin. The pigment compounds are often used as effective natural food colorants and thought of as best alternate for the artificial product. This study focuses the formulation of cassia auriculata based mostly food product extract. Phytochemical screening of the cassia auriculata disclosed the presence of assorted compounds like alkaloids, flavonoids, saponin, Terpenoids, glycosides, carbohydrates, aminoacids and phenols. The cassia auriculata tested for medicinal drug activity. Analysis of extraction potency of pigment by typical and small wave aided strategies. Cassia auriculata based mostly colorant were developed and therefore the analysed by Surface Methodology. And at last The spectroscopy of pigment by UV-Visible and FTIR strategies and quantitative estimation of total pigment. Natural food colorant dyes are used for several aesthetic functions from ancient days. Since they're nontoxic, Their use as food colorant is way safer for human consumption and area unit thought of as best different to artificial food additives. The natural dyes area unit terribly effective substitute for with chemicals synthesized dyes”.

ICFBRO18

ENVIRONMENTAL DISASTERS AND ENVIRONMENTAL IMPACT ASSESSMENT

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There is a worldwide acceptance that more and more irregular environmental disasters have occurred frequently than ever in every corner of the earth .On 7th February 2021 ,the glacier breaks which causes devastating flood and engulfing life of many people in Chandoli district of Uttarakhand (India).There is no doubt that these current extreme environmental problems are feedback of developmental activities, environmental disturbances such as global warming and also warning from nature.

Now it has become essential to maintain a balance between existing environment and development . For this, Government of India has brought the Environmental Impact Assessment notification in 1994.According to this ,new projects must have take clearance by the central government so as to achieve ecologically sustainable development.Environmental Impact Assessment is defined as an examination ,analysis and assessment of planned activities with a view to ensure environmentally sound and sustainable development. Infact EIA provides wider perspective and consequence of any development project ,operation which include administration program and policies, legislative action ,and physical ,chemical, biological, cultural and social -economical component of the total human environment .It is a management tool and legislative approach for integrating environmental factors with the planning ,operation and monitoring of developmental project and decision makers.

It is our duty to manage our environmental projects, health and secure livelihood ,economical safety for all .We believe strongly that we can and must do things differently for the sustainability of UNIVERSE.

ICFBRO19

CHARACTERISATION AND IMPACT OF PLANT GROWTH PROMOTING RHIZOBIA (PGPR) ISOLATED FROM ACACIA CATECHU SEEDLING

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The use of plant growth-promoting rhizobacteria (PGPR) has been shown to increase legume growth and production in field conditions and under controlled environmental conditions. Present investigation was carried out to assess the effect of plant growth-promoting rhizobacteria (PGPR) on the *Acacia catechu* seedling. Total of 62 isolates were isolated from the root nodules of *Acacia catechu*, out of which 2 isolates named AUB5 and AUP2 were screened on the bases of plant growth promoting traits. These two isolates were investigated for morphological, molecular and biochemical characterisation. The colonies obtained were opaque, round and gummy with raised elevation. The gram reaction indicates them as gram negative rods which are motile, non endospore forming capsulated microbes. Both the isolates were found to be pH and temperature sensitive. However they grow on wide range of salt concentration. On the bases of 16s rDNA both isolates were identified as *Paraburkholderia sp.* Further the effect of these two isolates along with different doses of nitrogen fertilizers were evaluated for the seedling of acacia catechu. These isolates were evaluated alone, in combination and together with nitrogen fertilizer. The confined strains had a stimulatory effect on growth, nodulation and physicochemical properties of the soil at the point where they were tried for their effect on plant growth. On the basis of result obtained in the present observations it can be concluded that isolate AUB5 and AUP2 were found to be *Paraburkholderia*, which can be exploited as a biofertilizer/bioprotectant for enhanced productivity and protection of *Acacia catechu* Willd.

Keywords: *Paraburkholderia*, *Acacia catechu*, PGP trait, Rhizobia

ICFBRO20

POLYHERBAL FORMULATION USED AS HERBAL TONIC FOR DIABETES

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Traditional medicines were derived from plants, as per World health Organisation (WHO) nearly 90 % of the population in developing countries use plants as a primary source of treatment. Diabetes Mellitus is a one of the fast growing metabolic disorder affecting people globally. It is caused by the deficiency or ineffective production of insulin by pancreas which results in increase or decrease in concentrations of glucose in the blood. In India it is proving to be a major health problem, especially in the urban areas. Though there are various approaches to reduce the ill effects of diabetes and its secondary complications, herbal formulations are preferred due to lesser side effects and low cost. These following plant species are *Allium sativum*, *Eugenia jambolana*, *Momordica charantia*, *Ocimum sanctum*, *Mimosa pudica* and *Trigonella foenum graecum* reduce insulin level in a proper quantity prepared as herbal tonic in a natural way. This study will help the diabetic patient lead a peaceful life.

Key words : Diabetes Mellitus, herbal tonic , glucose, pancreas, insulin.

ICFBRO21

ISSR MARKERS USING SEX IDENTIFICATION IN KIWIFRUIT (*ACTINIDIA DELICIOSA* (A. CHEV.) CF LIANG ET AL FERGUSON) GENOTYPES.

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Kiwifruit (*Actinidia deliciosa* {A. Chev.} CF Liang et AL Ferguson) ($2n=6x=174$) also known as Chinese goose berry and the horticultural wonder of New Zealand, is a commercially important crop and a very good source of Vitamin C. The present study was undertaken for identification of any probable ISSR linked to sex in kiwifruit genotypes. A total of seven genotypes of Kiwifruit were used that included two male {Tomuri and Allison (M)} genotypes and five female genotypes (Allison, Abbott, Bruno, Hayward, Monty). Genomic DNA was isolated from young leaves of kiwifruit

genotypes. For molecular analysis 104 ISSR primers were screened, out of which 24 ISSR primers amplified and were polymorphic. These were employed for genetic diversity analysis as well as sex identification of genotype. Among these polymorphic ISSRs, eight ISSRs were found to identify selected genotypes (Male and Female) on the basis of unique amplicons. IS7, IS11, IS93, IS88, IS114, IS107, IS101 and IS79 could identify genotypes. ISSR marker IS7 was used to identify Allison (F) & Bruno genotypes. Marker IS11 & IS93 was used to identify Bruno genotype. Marker IS88 was used to identify Monty genotype and marker IS114 was used to identify Hayward genotype. Marker IS101 identified Allison (M) by amplifying unique amplicon in Allison (M) and Marker IS79 amplified unique amplicon in Tomuri genotype and hence, this marker can be used to identify the Allison (M) and Tomuri genotypes respectively. ISSR marker IS107 could clearly distinguish between the two male genotypes as it amplified distinct unique amplicons in Tumori (M) & Allison (M) and can be used to distinguish between them. The results of present study can be utilized for sex and genotype identification at seedling stage and in kiwifruit improvement programmers.

Key words: *Actinidia deliciosa*, ISSR markers, Sex identification, Kiwifruit

ICFBRO22

A NEAR ANALYTIC SOLUTION OF A STOCHASTIC IMMUNE RESPONSE MODEL CONSIDERING VARIABILITY IN VIRUS AND T CELL DYNAMICS

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The immune system of an organism provides it the protection that it needs against foreign bodies (virus) by the process of proliferation of immune cells (T cells). This helps the body in carrying out its regular functions. Further, the presence of fluctuations due to various biochemical reactions in such systems accounts for the variability that is observed in the statistics of biological entities. Considering this, we present a stochastic immune response model explaining the dynamics of the T cells and virus particles. The model is used to obtain an analytical expression for the time dependent joint probability distribution function of T cells and virus, which is then used to calculate the average levels of virions in the system. Apart from the novelty in terms of an analytical result, the predictions

of the model are also compared against data from COVID-19 patients. These results hold significance in elucidating the role of fluctuations in the dynamics of virus replication and extinction. Keywords-immune response, viral infection, stochasticity, COVID-19

ICFBRO23

ISOLATION AND CHARACTERIZATION OF MARINE PROBIOTICS AND EVALUATION OF THEIR PROPHYLACTIC POTENTIALS IN EXPERIMENTAL COLORECTAL CARCINOGENESIS

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Colorectal cancer(CRC) is the most common cancers of the gastrointestinal tract. It is more common in industrialized countries due to their life style and dietary habits than in the developing countries. It is known to be a type of cancer that is preventable by changes in diet and life style. The environment harbours beneficial bacteria which can protect human from harmful threats when identified and utilized them accurately. In the present study a probiotic bacterial strain was isolated from marine fish and identified through 16S rRNA sequencing. Results of 16S rRNA sequence revealed that the organism was related to the *Lactobacillus rhamnosus* species. The isolate exhibited good probiotic properties. The prophylactic properties of the strain on N, N'-Dimethylhydrazine dihydrochloride (DMH) induced colorectal cancer in experimental animals were investigated. The study discusses and presents findings about the formulation of novel probiotic *Lactobacillus rhamnosus* MF2 strain for CRC treatment. The mechanisms are based on bacterial activity on CRC induced mice model. The results of this investigation indicated the potential role of probiotic treatment in the overall change of gut microbial actions, their inhibition potentials in colorectal cancer and improve overall gut health. The organism may be used as an alternative prophylactic biological therapy against colorectal carcinogenesis particularly in highly susceptible individuals.

Key words: Colorectal cancer, gut health, *Lactobacillus rhamnosus* MF2, Probiotics

RELATION BETWEEN ENVIRONMENTAL SCIENCE AND ENGINEERING

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As people recognized that their health was related to the quality of their environment, they built systems to improve it. The field emerged as a separate academic discipline during the middle of the 20th century in response to widespread public concern about water and air pollution and other environmental degradation. Environmental engineers in a civil engineering program often focus on hydrology, water resources management, bioremediation, and water and wastewater treatment plant design. Environmental engineers apply scientific and engineering principles to evaluate if there are likely to be any adverse impacts to water quality, air quality, habitat quality, flora and fauna, agricultural capacity, traffic, ecology, and noise.

Environmental engineering is the application of scientific and engineering principles to improve and maintain the environment to:

- protect human health,
- protect nature's beneficial ecosystems,
- and improve environmental-related enhancement of the quality of human life.

Environmental engineering is a name for work that has been done since early civilizations, as people learned to modify and control the environmental conditions to meet needs. Environmental engineering requires perspectives from a diverse set of scientific disciplines including atmospheric physics and chemistry, oceanography, glaciology, hydrology, geophysics, ecology, and biogeochemistry. The combination of Environmental science and Engineering is an interdisciplinary program with the common goal of understanding, predicting and responding to human-induced environmental change. Environmental scientists and engineers both focus on data gathered from the natural environment, particularly data on the past and future effects of human activity and its impact, in order to devise and implement solutions to a variety of issues. Thus these two fields of study can be

understood through science and engineering. Specifically, an environmental scientist will work like any other scientist, gathering and analyzing a set of data to provide answers to certain questions.

ICFBRO25

ANALYSIS OF IMMUNE-INDUCED ANTIMICROBIAL PEPTIDES AND THEIR ASSOCIATION WITH NEGATIVE GEOTAXIS IN *DROSOPHILA MELANOGASTER* AND *DROSOPHILA ANANASSAE*

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Insects can recognize invading pathogens and initiate the immune response to bacterial infections. Among them, *Drosophila* has emerged as an invertebrate model to investigate innate immune response in which antimicrobial peptides play a crucial role. In the present study, *D. melanogaster* and *D. ananassaewere* assessed for immune-induced antibacterial peptides by agar well diffusion, HPLC and SDS-PAGE method after infection with either *S. aureus* (Gram-positive) or *E. coli* (Gram-negative). The impact of bacterial infection on the climbing ability of these two fly species were also determined. The HPLC data showed two and three differentially induced components in either *S. aureus* or *E. coli* infected *D. melanogaster* and *D. ananassaes* flies respectively. The tricine SDS-PAGE analysis also indicated two and five differentially induced proteins in *E. coli* infected *D. melanogaster* and *D. ananassaes* species respectively. The results further confirmed that the *E. coli* infected fly homogenate had increased protein concentration, higher antibacterial activity and better climbing ability than *S. aureus* infected flies. These data revealed that two *Drosophila* species generated a clear distinct immune response which are also able to discriminate between *S. aureus* and *E. coli*, as ~4-6 kDa peptide expression was detected only in *E. coli* but not in *S. aureus* infected flies (24 h post-infection). Further, the identification of the AMP of interest and its role in possible adaptive immunity is under exploration.

A REVIEW ON PATHOBIOLOGY OF SARS COV-2

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Coronavirus disease 2019 (COVID-19) is a major health concern in the contemporary era and has been proved to be devastating, especially for the elderly and immune-compromised (according to WHO reports). The causal agent of COVID-19 is the SARS-CoV-2 virus. According to the foregoing researches a lot has been reported on the mortality and fatality of the virus, but a very few are focused towards its pathobiology. A vivid depiction of the cellular responses to this virus is not known but a few researches investigated a probable course of events that might be taking place based on past studies with SARS-CoV. Based on the cells that are likely infected, COVID-19 can be divided into three phases that correspond to different clinical stages of the disease. Firstly, the asymptomatic state, in which the inhaled virus SARS-CoV-2 binds to epithelial cells in the nasal cavity and starts replicating. ACE2 is the main receptor for the virus. Contradicting to the afore-said several researchers are of opinion that SARS-CoV enters cells via pH- and receptor-dependent endocytosis. When a cell encounter with SARS-CoV spike protein, it resulted in the translocation of angiotensin-converting enzyme 2 (ACE2), the functional receptor of SARS-CoV, from the cell surface to endosomes. As per previous studies on SARS-CoV, the ciliated cells are primarily infected in the conducting airways, whereas studies also revealed that single stranded RNA indicates low level of ACE2 expression in conducting airway cells. At this stage the virus can be detected by nasal swabs. The RT-PCR value for the viral RNA might be useful to predict the viral load and the subsequent infectivity and clinical course. Secondly, upper airway and conducting airway response phase. The virus propagates and traverses down the respiratory tract along the conducting airways, and a robust innate immune response is triggered in this phase. The level of CXCL10 (C-X-C motif chemokine ligand 10) probably be predictive of the upcoming clinical course. Viral infected epithelial cells are the chief source of β and λ interferon. Research articles suggest that CXCL10 is an useful disease marker in SARS. In 80% of

the infected patients, the disease will be mild and mostly restricted to the upper and conducting airways. And thirdly, Hypoxia, ground glass infiltrates, and progression to ARDS. 20% of the infected patients will progress to the third stage of the disease and will develop pulmonary infiltrates. The virus now reaches the gas exchange units of the lung and infects alveolar type II cells. Both SARS-CoV and influenza infect type II cells in comparison to type I counterpart. The pathological result of SARS and COVID-19 is diffuse alveolar damage along with perturbation in the fibrin rich hyaline membranes and a few multinucleated cells. A significant innate and acquired immune response and epithelial regeneration could lead to the survival.

ICFBRO27

INCIDENCE OF *rs10818854* DENND1A SINGLE NUCLEOTIDE POLYMORPHISM IN POLYCYSTIC OVARY SYNDROME (PCOS) PATIENTS OF SOUTH TAMIL NADU, INDIA

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Polycystic ovary syndrome (PCOS) is the most common endocrinopathy among reproductive aged women, with a prevalence of approximately 6%-10%. It is characterized by Oligomenorrhea, High LH : FSH (Luteinizing hormone : Follicle stimulating hormone) ratio ($>2/3:1$), polycystic ovaries, Hyperandrogenism associated with an increased risk for obesity, insulin resistance and type 2 diabetes. Ethnicity, genetic factors and environmental factors plays a major role in the development of the syndrome. Hence large number of studies done among the people from different ethnic backgrounds are requires to unravel the interesting role of genetic factors in PCOS. Genetic alterations within the DENND1A gene have been implicated in human diseases such as polycystic ovary syndrome (PCOS). However, the role of DENND1A in developmental and reproductive processes is largely unknown. The main objectives were to study the incidence of DENND1A rs10818854 gene polymorphism associated polycystic ovary syndrome (PCOS) in south Indian population and to understand the influence of DENND1A polymorphisms & its association with BMI, Random Blood Sugar, Thyroid Stimulating Hormone and Free Thyroxine in PCOS patients. The patient (10) & control (4) peripheral blood samples were collected and genomic DNA was isolated. Then PCR was done to amplify the DENND1A gene variants and it is sequenced bidirectionally. After that bioinformatics analysis was performed to confirm the presence of SNP. From the analysis only 6.25% (infertile/subfertile patients) of them tested heterozygous positive for rs10818854 SNP. Our pilot study results strongly indicate that DENND1A is less prevalent

and may be incident in a PCOS patients tending to exhibit infertility. Further studies would unravel the interesting role of DENND1A in the Tamil Nadu population.

ICFBRO28

ACRYLAMIDE: BYPRODUCT OF OUR MODERN FOOD HABITS

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Acrylamide ($\text{CH}_2=\text{CH}-\text{CONH}_2$) is a common chemical which is used in both industrial and laboratory processes. The most important use of acrylamide is in the production of high molecular weight polyacrylamide. Polyacrylamide and acrylamide both have numerous applications in cosmetic industries, plastic and aesthetic surgeries, ophthalmic operations, waste water treatments, oil recovery processes, and other industrial and laboratory processes. In scientific researches acrylamide is also used to selectively modify $-\text{SH}$ groups and as a quencher of tryptophan fluorescence in studies designed to elucidate the structure and functions of proteins. Although the polymeric form of acrylamide is reported to be nontoxic, its monomeric form has a potential to cause a wide spectrum of toxic effects. It is reported to be a multisite carcinogen, neurotoxic, genotoxic, and may also cause reproductive toxicity. Commercially it is produced by catalytic hydration of acrylonitrile. Recent investigations have indicated that it is also formed in heated starchy foods especially potato products via the Maillard-type reaction mainly between the amino acid asparagine and a carbonyl source such as the reducing sugars glucose and fructose which is a recent issue of concern as today's food habits of new generation is full of packaged and processed food.

Key words- Acrylamide, potato products, maillard reaction

ICFBRO29

CRYSTAL STRUCTURE OF MALATE DEHYDROGENASE FROM *TRYPANOSOMA CRUZI*

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Glycosomal malate dehydrogenase from *Trypanosomacruzi*(tcgMDH) catalyzes the oxidation/reduction of malate/oxaloacetate, a crucial step of the glycolytic process occurring in the glycosome of the human parasite. Inhibition of tcgMDH is considered a druggable trait for the development of trypanocidal drugs. Sequence comparison of MDHs from different organisms revealed a distinct insertion of a prolin rich 9-mer (62-KLPPVPRDP-70) in tcgMDH as compared to other eukaryotic MDH. Crystal structure of tcgMDH is solved here at 2.6 Å resolution with R_{work}/R_{free} values of 0.206/0.216. The tcgMDH forms homo-dimer with the solvation free energy (ΔG°) gain of -9.77 kcal/mol. The dimeric form is also confirmed in solution by biochemical assays, chemical-crosslinking and dynamic light scattering. The inserted 9-mer adopts a structure of a solvent accessible loop in the vicinity of NAD⁺ binding site. The distinct sequence and structural feature of tcgMDH, revealed in the present report provides an anchor point for the development of inhibitors specific for tcgMDH, possible trypanocidal agents of the future.

KEYWORDS: Malate dehydrogenase, Crystal structure, *Trypanosomacruzi*, Glycosome, Glycolytic enzymes, Protein crystallography

ICFBRO30

PHYTOCHEMICALS EFFICACY AS AN ANTI-INFECTIOUS AGENTS: A REVIEW

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Major causes of mortality worldwide are due to various kinds of infections originated due to infectious organisms such as bacteria, viruses, fungi or helminthes. These infectious diseases may be very frequent and too strange kind of ailments including pneumonia, sinusitis, hepatitis (A, B and C), Acquired immune deficiency syndrome (AIDS), severe acute respiratory syndrome (SARS),

MERS, Ebola virus infection, infectious diarrheas, sexually transmitted diseases and many others. Therapeutics for many infectious diseases have been discovered so far although presently we all have seen the havoc of a huge pandemic SARS COV-2 thus dilemma regarding safety and security of public health from infectious diseases is still persisting. This review aims to emphasize over existing natural components such as phytochemicals and Essential oils derived from different plants that are established as an extremely efficient to cure several of contagious diseases. The wealth of natural plant products owing to the occurrence of various antibacterial, antiviral, antimicrobial and anti infectious components such as secondary metabolites including flavonoids, saponins, quinones, coumarins, steroids, alkaloids, tannins, etc is very well established. The phytochemicals may modulate the functioning of transcription factors along with the various molecular mechanisms in humans therefore show anti-infective, anti pyretic nature, immuno-modulatory action, anti-HIV, antioxidants and antimicrobial action. These natural products not only possess therapeutic potential as an antimicrobial agent but also are very cost effective and with lesser side effects.

Key words: Phytochemicals, Anti-infectious, Antimicrobial, Therapeutics, Essential oils

ICFBPRO31

CHARACTERIZATION OF HEAVY METAL DEGRADING BACTERIA ISOLATED FROM HEAVY METAL CONTAMINATED SOIL LOCATED IN JHARKHAND AND EVALUATION OF THEIR ANTIBIOTIC AND HEAVY METAL RESISTANCE

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Abstract

The present study focused on identifying heavy metal degrading bacteria in soil sample collected from jharia coalfield sites Jharkhand. For isolation of bacteria from the soil sample was serially diluted

tenfold; the highest dilution (10^{-6}) sample was inoculated onto nutrient agar plates and incubated at 37°C for 24 hrs. Colonies with diverse morphological features from the mixed cultures were sub cultured in order to obtain pure colonies. These colonies were then grown on nutrient agar containing diverse molarities of salts of heavy metals (Zn, Cd, Pb and Hg). The highest concentration of each heavy metal growth was observed were as follows: Zn-8mM, Cd-4mM, Pb-6mM and Hg-4mM. The bacteria having multiple tolerances were identified as *Pseudomonas spp.* on the basis of colony morphology, microscopic examination and biochemical tests. *Pseudomonas aeruginosa* was identified through 16S rRNA sequencing. The tolerant isolate was further subjected to in vitro antibiotic cultural sensitivity assay and were found resistant to multiple antibiotics. The study is of significance in that such bacteria can be utilized for bioremediation of heavy metals in the environment particularly in the treatment of heavy metal contaminated soil.

Keyword :- *Pseudomonas aeruginosa*, Bioremediation, Antibiotic, Heavy metal.

ICFBRO32

FOLIARAPPLICATIONS OF SALICYLIC ACID AND ASCORBIC ACID ALLEVIATES NaCl TOXICITY BY ENHANCING GROWTH AND PIGMENT COMPOSITION OF VIGNA UNGUICULATA (L.) WALP

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Salinity stress is one of the environmental constraints that have a profound influence on crop productivity. Glycophytes especially legumes which are the major source of food possessing high nutrient value exhibits less response to abiotic stresses like NaCl stress. Thus, alternative strategies are explored to mitigate the salt stress and to improve stress tolerance. In this view, the present study was evaluated to check the effect of foliar applied Salicylic acid (0.25mM) and Ascorbic acid(0.5mM) on growth traits and pigment contents in cowpea Vamban-1 variety grown under 200mM NaCl stress. Briefly, the pot experiment was carried out in a complete randomized block design with three replicates each. Salinity treatment (NaCl-200mM) was imposed on 15th days after sowing (DAS), and foliar

spraying of SA (0.25mM) and AsA(0.50mM) was done manually once symptoms were visible under salinity. Sampling was done on 30thDAS for analysis. NaCl treatment decreased, growth, biomass, and chlorophyll pigments in cowpea compared to control. In contrast, SA and AsA treated plants, all traits like plant height, fresh mass, dry mass, chlorophyll, and carotenoid contents have increased tremendously, on 30thDAS respectively compared to salt treated one. It can be concluded that foliar applications of SA and AsA help cowpea to improve growth and metabolism by enhanced photosynthetic activity under NaCl stress.

Keywords: NaCl stress, growth enhancers, *Vigna unguiculata* L, pigments

Poster Presentation

ICFBRP01

ASSESSMENT OF THE POTENTIAL TOXIC EFFECTS OF AN INSECTICIDE SELECTIVE (ALPHYTHRINE) ON PHYSIOLOGICAL RESPONSES, BIOCHEMICAL AND ENZYMATIC OF A BIOLOGICAL MODEL OF FRESHWATER : DAPHNIA MAGNA

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The present work aims to evaluate the potential acute toxicity of a non-selective organochlorine insecticide, Aphythrine on a freshwater water cladoceran, *Daphnia magna*. The insecticide, the active ingredient of which is deltamethrin, is made in Algeria and widely used by farmers. For the performance of our assessment, we proceeded to expose daphnids to a range of increasing concentrations of deltamethrin. The concentrations tested are: 75, 80, 85.90 and 95 μ / L. The results obtained show that the mean lethal concentrations (LC50), calculated by the Probit analysis, are of the order of: 1.90 and 1.95 μ g.L⁻¹ after 24 and 48 hours respectively. In addition, the antioxidant assay revealed oxidative stress which resulted in a drop in glutathione (GSH) and increased glutathione-S-transferase (GST) and catalase (CAT) activities. Our results show that deltamethrin is an insecticide toxic to *Daphnia magna*.

Keywords : *Daphnia magna*, Alphythrine, oxidative stress, , Mortality, Antioxidants.

ICFBRP02

SEQUENCE ANALYSIS AND q-PCR STUDIES OF AQUAPORIN GENE IN TWO VARIETIES OF PADDY

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Plant aquaporins are water channel proteins of intracellular and plasma membranes that play a crucial role in plant water relations. They are distributed in various plant tissues relating to water transport, cell differentiation and enlargement. Several studies have been reported so far on the molecular and cellular properties of plant aquaporins with respect to their diversified functions *viz.* nutrient acquisition, carbon fixation, cell signaling and stress responses. Plant aquaporin exhibits remarkable multiplicity of isoforms. Based on physiological functions, plant aquaporins generally can be classified into four types i) plasma membrane intrinsic proteins (PIPs) ii) Tonoplast intrinsic proteins (TIPs) iii) Small and basic intrinsic proteins (SIPs) iv) Nodulin like intrinsic proteins (NIPs). As a protein of direct link with water balancing systems in controlling the physiology of the plant, plant researchers have given more attention to aquaporin protein and its gene for decades. Earlier reports on rice aquaporin gene at molecular level have been confined to the stress tolerance during chilling, drought and flood. The main focus of the present study is the molecular analysis of the aquaporin gene specific to the plasma membrane intrinsic proteins (PIPs) in pokkali variety of paddy with respect to salinity stress. The objectives of the study include i) Amplification of the aquaporin gene specific to plasma membrane intrinsic proteins using the gene specific primers designed. ii) cloning and sequencing of the aquaporin gene iii) sequencing analysis for determination of single nucleotide polymorphisms (SNPs) and associated amino acid substitutions iv) quantitative expression of plasma membrane intrinsic proteins in pokkali and jyothis using q-PCR v) prokaryotic expression of aquaporin gene in pokkali v) purification of the recombinant aquaporin protein.

For the study we have selected two varieties of *oryza sativa* for evaluating the stress response of the plant with respect to aquaporin. One is a normal variety called jyothis preferable to all regions of Kerala except water logged areas. The other variety is pokkali exclusively adapted to water logged regions with varied salinity level. Pokkali is an indigenous rice variety cultivated in an organic way in saline rich coastal regions of Ernakulam, Alappuzha, and Thrissur districts of Kerala. In the first phase of investigation, aquaporin gene fragment of 180bp was amplified using designed gene specific primers. The amplified product was cloned and sequenced. Sequencing analysis of the fragment indicates single nucleotide polymorphism at twenty regions in pokkali with four amino acid substitutions K/T, S/T, N/S, A/S at positions 1,23,31,34 respectively. In order to determine expressional difference of aquaporin gene in the normal variety jyothis and the stressed variety pokkali, the expression was quantified by q-PCR. Real time primers for the study were designed using e-prime software. Based on the validation of housekeeping gene of paddy, pokkali showed a lower

level of expression than the normal cultivar indicating the poor efficacy of the gene expression under salinity stress. For prokaryotic expression the amplified gene was cloned in to prokaryotic expression vector pET3a. The confirmed clone was transferred into an expression host BL21 (DE3) pLysS and cultured under optimum conditions. The expressed recombinant protein was purified by affinity chromatography and documented by SDS-PAGE.

Keywords: Aquaporin, q-PCR, Prokaryotic expression, SDS-PAGE

ICFBRP03

COMPARATIVE STUDY OF CALLUS INDUCTION IN THE FLORAL AND THE VEGETATIVE PARTS OF CRATAEVA NURVALA

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Crataeva nurvala Buch Ham. (Family: *Cappariaceae*) is an important medicinal deciduous tree. Extracts of plant parts have medicinal, pharmaceutical as well as pharmacological activities. The bark extracts like lupeol (a pentacyclic triterpene) of this tree showed anti-inflammatory, litolytic properties towards fever and kidney disorders and have others medicinal applications. *C. nurvala* is considered as vulnerable due to erratic seed germination, destructive harvesting and habitat loss from deforestation. Therefore, conservation of this plant becomes necessity. The natural propagation of this plant is slow and its availability is restricted. Microporpagation techniques using plant tissue not only helps to get healthy plants but also employed as one of the conservation technique. The present work was focused to callus induction from various explants of *C. nurvala* using various growth hormones i.e. 2, 4- dichlorophenoxyacetic (1, 1.5, 2 and 3 mg/l) in combination with kinetin (0.2, 0.3. 0.4 and 0.5mg/l) supplemented in Murashige and Skoog's (MS) medium. Explants used were gynophore, ovary, anther, filament, leaf, node and internodes. Vegetative parts induced were amorphous yellowish white colored which sustained till one month. Floral part gave compact watery white callus after 10 days of incubation under 16×8 h photoperiod at 25 ± 2 °C. Callus can be used further for the complete regeneration of the plant through somatic embryogenesis or organogenesis.

Keywords: Callus, *Crataeva nurvala*, Medicinal plant, Micropropagation, Plant Tissue Culture

DEVELOPMENT OF BIOELICITORS FOR MITIGATING THE TERMINAL HEAT STRESS AND ENHANCING THE NUTRITIONAL DENSITY OF WHEAT: A NOVEL APPROACH FOR THE DEVELOPMENT OF 'CLIMATE-SMART' CROP

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Wheat (*Triticum aestivum* L.) is a primary staple food crop of India and provide major portion of carbohydrate and calories in the diet. Heat Stress (HS), especially during the critical stages i.e. pollination and grain-filling, has a severe effect on the quantity and quality of the wheat grains. Different approaches have been developed in the past to enhance the tolerance level of the agriculturally important crops, but with limited successes. Heat Stress i.e. the rise in temperature beyond a certain threshold level for a period, causes irreversible damage to the plants affecting key metabolic processes. Since, bioelicitors have been reported to enhance, promote, trigger the genes/enzymes associated key metabolic pathways and defence network of the plant against biotic/abiotic stresses we conducted a pilot experiment and finalized a combination of thermostable microorganism *Bacillus amyloliquefaciens* culture (5% v/v @ 10 mL/plant), Neem leaf crude extracts (2.5% w/v @ 10 mL/plant) (active compound Azadirachtin) and Moringa leaf extract (2.5% w/v @ 10 mL/plant) (active compound Kaempferol) as a bioelicitor formulation and applied the same six times on alternate day during germination and pre-anthesis stage. Physiological and biochemical tools have been used to analyse the effect of bioelicitors in terms of defense and nutrient density in grains of contrasting wheat cultivars (HD2967, HD2985 as thermostable and HD2329, BT-Schomburgk as thermosusceptible) under terminal HS(38°C, for 2h) during pollination and grain-filling stages of growth. The application of bioelicitors formulation led to changes in the chlorophyll density, improvement in overall root morphology, and increase in number of tillers, length of a leaf as well as a spike in T3 (B+HS) treatments despite the heat shock T1 HS (38°C, 2h); the effect being more pronounced in HD2967, HD2985 than BT-Schomburgk, HD2329. The HD2967 and BT-Schomburgk showed maximum Total Antioxidant Capacity (TAC) in T3 (B+HS) treated leaves during the pollination stage; whereas HD2985, BT-Schomburgk T3 (B+HS) leaves were having maximum

activity during the grain-filling stage. Grain quality related attributes like starch content, amylose content, amylopectin content were higher in T3 (B+HS) against T1 (HS) in HD2967. The T3 (B+HS) treatment has escalated the total antioxidant content in leaf of thermostable as compared to thermosusceptible varieties at two critical stages. T1 (HS) treatment induced activity of amylase enzyme in all wheat cultivars. We observed T3 (B+HS) reduced activity of starch degrading enzyme, amylase in the thermotolerant cultivar HD2967 as compared to what we saw in thermosusceptible cultivars. Hence, the improvement of starch quality in seeds implies the beneficial role of bioelicitors against stress injuries in wheat. This investigation provided a cheap and user-friendly technology for mitigating the effect of terminal HS in wheat which can be explored in other crops as well.

Keywords: Wheat; Terminal Heat Stress; Bioelicitors; Nutrition; Thermotolerance; HD2967; HD2985; HD2329; BT-Schomburgk.

ICFBRP05

CONSERVATION OF *SPIRANTHES SINENSIS*, A MEDICINAL ORCHID

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Spiranthes sinensis (Pers.) Ames., is a very beautiful orchid with spirally arranged pink-colored and slightly opened flowers. In the Ayurvedic system of medicine, the roots of this plant are used as aphrodisiac and to cure various diseases like haemoptysis, headache, meningitis and chronic dysentery. During the survey, distribution of *S. sinensis* was observed in Himachal Pradesh. Due to various factors including destruction of habitat by the movement of local people for fuel and fodder, tourists, movement of domestic animals and urbanization, a rapid decrease in its population was observed. In the present poster, efforts taken for the *in situ* and *ex situ* conservation of this important orchid have been presented.

THE STUDY OF MEDICINAL POTENTIAL PLANT OF *ANISOMELES MALABARICA* (L.) R. Br.

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Anisomelesmalabarica (L.) R. Br. is perhaps the most useful traditional medicinal plant. It is a highly aromatic plant belonging to the family Lamiaceae

Is represented by 45 genera and 574 species with 256 endemic species. *Anisomeles malabarica* is a species of herbaceous plant native to tropical and subtropical regions. It is erect shrub commonly known as “Malabar catmint” and “payi merati” distributed throughout South India. *A.malabarica* is an aromatic, densely Pubescent, perennial herb, 1.2-2.0 meter in height. Leaves are simple, opposite, very thick, aromatic, oblong-lanceolate, acute, pale above, white below, crenate-serrate, and woolly; flowers purple, in dense whorls of more or less interrupted spikes; fruits nutlets, bearing ellipsoid and compressed seeds. Phytochemical studies of *A. malabarica* have shown the presence of anisomelic acid, anisomelolide, 2-acetoxymalabaric acid, anisometyl acetate anisomelin, betulinic acid, β sitosterol, Citral, geranic acid, malabaric acid, ovatodiolide, and triterpenebetulinic acid. Antibacterial activity shows inhibitory effect for gram positive and gram negative bacteria and also has antifungal,antiviral activity.The phytocompounds used for anti-allergic, anti-carcinogenic, anticancer, antipyretic,antispasmodic.It has been used as a folk medicine to treat amentia, anorexia fever, swelling and rheumatism. It is also used for the treatment of various kind of diseases like malaria, yellow fever, dengue fever, filariasis and encephalitis.

ENVIRONMENTAL MANAGEMENT THROUGH GREEN TECHNOLOGY

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Water and soil pollution is the most important source that known to be present in the earth. The water bodies are affected by various contaminants especially chemical wastes deposition from the sewage disposal. It alters the physical and chemical properties of the water sources and harmful effect on living organisms in the water bodies. The soil is majorly polluted by waste from the industry. It effects the consumer and fertilized soil. This water and soil remediated by using some plants especially Hydrophytes. Phytoremediation is the best and simplest method to remove pollutants from both water and soil. Most important think which is cost-effective and eco-friendly. Further the many researchers recorded as Phytoremediated water increase the growth and yield of the agricultural crops. So farmers can be use Phytoremediated water to their agricultural fields instead of fertilizer and water scarcity. Not only it can protect the environment from this but it can also protect in from extinction. And also Phytoremediated plants are involved in bioenergy production from this we get biofuel and other bioenergy products without environmental pollution.

Key words: Agriculture, Bioenergy, Fertilizer and Phytoremediation.

ICFBRP08

PURPLE SWEET POTATO: AN ANTHOCYANIN RICH PLANT WITH MULTIPLE BENEFITS

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Purple sweet potato (*Ipomoea batatas* Linn.) shows an interesting purple-red colour, excessive anthocyanin content, and high total phenol content. Many studies show that anthocyanin have anti-diabetic, anti-obesity, hypoglycaemic, antioxidant, neuroprotective, antiproliferative, antiulcer, anti-inflammatory, wound healing, antitumor, antimutagenic, anti-apoptotic and hepatoprotective properties. Purple sweet potato anthocyanins (PSPA) are, for the most part, composed of cyanidins and peonidins in the form of monoacylation and deacetylation. There is evidence that PSPA illustrate an opposite effect in non-cancerous cells by emphasizing its cell viability and opposition to apoptosis (cell death). Purple sweet potato anthocyanins show stability in opposition to pH, heat, and photosensitivity, by which it can be used for coloured tablets. PSPAs can also be used as stronger dye

to beverages, and food items, as it has much better stability than other anthocyanin pigments from blackberry, grape peel, etc, and has major beneficial uses to human welfare.

Key words: Purple Sweet Potato Anthocyanins, anti-obesity, anti-tumour, anti-apoptotic, stability

ICFBRP09

THE LIVESTOCK INDUSTRY HAS NUMEROUS AND DIVERSE IMPACTS ON THE ENVIRONMENT

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The livestock and environment nexus has been the subject of considerable research in the past decade. With a more prosperous and urbanized population projected to grow significantly in the coming decades comes a gargantuan appetite for livestock products. There is growing concern about how to accommodate this increase in demand with a low environmental footprint and without eroding the economic, social, and cultural benefits that livestock provide. Most of the effort has focused on sustainably intensifying livestock systems. Two things have characterized the research on livestock and the environment in the past decade: the development of increasingly disaggregated and sophisticated methods for assessing different types of environmental impacts (climate, water, nutrient cycles, biodiversity, land degradation, deforestation, etc.) and a focus on examining the technical potential of many options for reducing the environmental footprint of livestock systems. However, the economic or sociocultural feasibility of these options is seldom considered. Now is the time to move this agenda from knowledge to action, toward realizable goals. This will require a better understanding of incentives and constraints for farmers to adopt new practices and the design of novel policies to support transformative changes in the livestock sector. The livestock industry has numerous and diverse impacts on the environment. The data were analysed using correlation - tests for independent samples and listen regression models. There is a need to raise awareness of the environment and health

impacts caused by livestock Industry. Further research should be conducted among the additional population selection.

Keywords: Environmental Pollution, Sustainability, Livestock Industry, Pro - environmental behaviour, green house gas emissions, knowledge, Attitudes

ICFBRP10

CONSERVATION STRATEGY ON BORASSUS FLABELLIFER L.

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Borassus flabellifer L. is a nature's gift to this mankind. It belongs to Arecaceae family and a state Tree of Tamil nadu. This plant plays a vital role in ecological, medicinal, economical and sociological aspects and it can withstand natural calamities Borassus flabellifer L. found widely in tropical and arid countries ranging from India through south-east Asia to new Guinea. It is closely associated with the rural livelihood, cottage and Agro - based Industries of Indian economy. Borassus flabellifer L. can tolerate any climatic condition and it has the ability to increase underground water level. Now a days Borassus flabellifer L. population is in the verge of endangered condition. So we have to conserve the Borassus flabellifer L. for future generation utilization. Through seed propagation we are going to enrich the population of Borassus flabellifer L. It is widely used as edible, non-edible and value added products to this world.

Key Words: State Tree of TamilNadu, Edible, Non-edible & Value added products.

ICFBRP11

BIOSURFACTANTS-AN ALTERNATIVE FOR BIOREMEDIATION: A REVIEW

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Biosurfactants are microbial metabolites. They are surface active agents due to their amphiphilic property and include lipopeptides, glycolipids, phospholipids, neutral lipids and polymeric compounds. Environmental pollution by organic contaminants is a major problem today. The inherent chemical nature of hydrophobic contaminants leads to their persistence in environment for a long period of time. This increases the chances of contaminants polluting different micro and macro environments' flora and fauna. Hydrophobic pollutants bind to the soil particles and because of their low solubility in water and high interfacial tension cannot be easily removed. Biosurfactants decrease the interfacial tension and increase the surface area of substrate hence making the hydrophobic contaminants more amenable to degradation. Chemical surfactants used traditionally have high toxicity, low sustainability and low shelf life. Biosurfactants are increasingly replacing chemically produced surfactants because of their substrate specificity and ease of production from natural resource besides winning the former points from their chemical counterparts. The world trade is gradually shifting towards greener products, thus exploiting the potential of microorganisms on industrial scale is need of the hour. The present review focuses on different paradigms of biosurfactant production and their ability of bioremediation.

ICFBRP12

CAR T CELL THERAPY: GENETICALLY ENGINEERED T CELL AS A NEW ERA IN IMMUNOTHERAPY TO TREAT CANCER

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Cancer is one of the leading causes of death worldwide. For years, the foundation of cancer treatment were surgery, chemotherapy and radiation therapy. Over the last two decades, targeted therapies cemented themselves as standard treatment for many cancers. Due to the limited effectiveness owing to the heterogeneity of different types of cancer there has been a constant search for novel therapeutic approaches with improved outcome, such as immunotherapy that utilizes and strengthens the normal capacity of the immune system. Over the past several years, it emerged as the 'fifth pillar' of cancer treatment.

The most common procedure for CAR T cell therapy involves the extraction of T cells from the patient's blood called leukapheresis, followed by genetic modification to express a Chimeric antigen receptor (CAR) on its surface specific for a tumour antigen, which is brought about by viral-based gene transfer or non-viral methods such as, DNA-based transposons, CRISPR-Cas 9 technology, or direct transfer of in-vitro transcribed m-RNA by electroporation. The CAR T cells are cultured for ex-vivo cell expansion followed by re-infusion to the patient to attack cancer cells. CARs are fusion proteins of selected single chain fragments from a specific monoclonal antibody and one or more T cell receptor intracellular signalling domain. Clinical trials show high success rates in end-stage patients with full recovery upto 92% in acute lymphocytic leukemia. Despite such promising results in haematological cancers, CAR T cell therapy shows limitation in effective translation in case of solid tumours and clinical experience due to therapeutic barriers like T cell expansion, persistence and trafficking. The basic design, methodologies for genetic modification and safety matters with CAR T cells are described. This therapy has the potential to bring a breakthrough in cancer treatment strategy.

Keywords: Cancer, immunotherapy, T cells, Chimeric Antigen Receptor (CAR), genetic engineering, lymphoma, leukemia.

ICFBRP13

INNOVATIVE WAYS TO REDUCE GLOBAL WARMING

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Global warming is the long term heating of earth's climate system observed. Since the pre-historic period, due to human activities, primarily fossil fuels burning which increases heat trapping greenhouse gas levels in earth's atmosphere. It happens when green house [carbon dioxide, Nitrous oxide, methane] trap heat and light from the sun in the earth's atmosphere. Which increases change and it causes severe effect in living creature and leads to death. Due to melting glaciers, sea levels are raising and change climatic conditions. Global Warming is accelerating faster than climatologist and it can be calculated a few years ago. Many countries have signed a convention to reduce green house

gases on climate change. It was happen ancient period to still date. This present study will exhibit various recent technologies to reduce global warming .

Key words: global warming, green house gases, melting glaciers

ICFBRP14

PROBIOTIC THERAPY

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Probiotics have increasingly become popular in the last few decades which promise to confer health benefits to the consumer. Probiotics are the microbes intended to have health benefits which when consumed in adequate amount and able to colonize the small intestine. Most common are the bacteria that belong to groups called *Lactobacillus* and *Bifidobacterium*. Similarly a diverse variety of microbes naturally present in a healthy individual's intestinal tract called Gut microbiome also plays a major role in protection against pathogenic bacteria, influence and mediate drug absorption & metabolism, digest resistant-starch and lactose, modulate immune system, educate immune cells, provide beneficial metabolites from microbial fermentation like SCFA (short chain fatty acids) & vitamins. Restoration of a healthy gut microbiota and additional therapeutic benefits can be achieved by Probiotics or substances that stimulate growth of desirable gut microbe (Prebiotics). The review addresses the need to research, exploit and modify the gut microbes in population suffering from gastrointestinal conditions, allergy, hepatic infections, drug ineffectiveness, obesity and imbalance in 'Gut-microbiota-Brain axis' through Probiotic therapy.

Keywords : Probiotics, Gut-microbiota-brain axis, Short chain fatty acids, Intestinal tract, Prebiotics

ICFBRP15

ANTIMICROBIAL ACTIVITY OF *SANSEVIERIA ROXBURGHIANA* (DRACANACEAE):- A SUPERIOR ORNAMENTAL PLANT

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Nature is the prime source of potent medicinal herb to cure the ailment of mankind. For making disease free healthy life medicinal plants are the nature's gift to human beings. *Sansevieria roxburghiana* is an traditional indian herb used for various ailments by traditional healers. It belong the family Dracaceae which indicate rhizomes root. In this study we have carried out antimicrobial investigation of different solvent and the aqueous leaves extract and rhizome of *Sansevieria roxburghiana* against a panel of clinically significant bacterial and fungal strains. Some phytochemical studies revealed the presence of carbohydrates, saponin, flavonoids, phenols, alkaloid, anthocyanin and cyanin, glycosides, proteins and phytosterols. Susceptibility the disc diffusion assay trial revealed significant antimicrobial activity of methanol and acetone leave extracts against gram-positive bacteria such as *Micrococcus luteus*, *Bacillus cereus*, *Enterococcus spp.*, *Bacillus thuringiensis* and Gram-negative bacteria such as *Staphylococcus maxima*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Salmonella paratyphi*, *Klebsiella pneumoniae*, *Shigella sonnei*, *Clustridium tetanae*, *Escherichia coli*, fungal strains *Cryptococcus spp.* and *Candida albican*. An appreciable antimicrobial activity was shown by the extract of the rhizomes against most of the pathogens tested. The minimum inhibitory concentrations (MIC) of the various extracts by Agar-Dilution method ranged from 1.0 to 8.0mg/ml. The leaf extracts exhibited better antimicrobial activity than rhizomes. The study findings provide supportive evidence for the use of *S. roxburghiana* in traditional medicines . Therefore, it can be concluded that *Sansevieria roxburghiana* may be considered as a natural source of many pharmacologically active constituents as well as antimicrobial agent and useful for the development of herbal formulations.

Key words:-*Sansevieria roxburghiana*, Agar Dilution , Alkaloids, Rhizomes.

ICFBRP16

A PHYTOPHARMACOLOGICAL REVIEW ON ALOE BARBADENSIS (PIPERACEAE): THE KING OF SPICES

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India is the richest source of several types of medicinal plants and herbs. About 85% of peoples use medicinal plants for curing and preventing themselves from various diseases in the whole world. The medicinal herbs are the backbone of medicine science. Medicinal herbs are used as the primary treatment of different diseases from ancient times in the whole world. Nowadays uses of organic extracts of medicinal herbs became increased in the treatment of several medicinal problems due to less toxic effects and cost-effectiveness. It is generally known as aloe vera. It is found all over the world i.e. India, China, America, Australia, Africa, England etc. *Aloe barbadensis* contains several biologically active constituents, like vitamins, minerals, saccharides, amino acids, anthraquinones, enzymes, lignins, saponins, and salicylic acids. It contains a few ingredients that are part of the isoprenoid pathway and it also contains different enzymes such as carboxypeptidase, cyclooxygenase, bradykinase, carboxypeptidase. Various literature surveys reported that *Aloe barbadensis* extract inhibited the growth of MCF-7 and HL60 cells through the induction of programmed cell death or apoptosis. Hence the leaf extract has a rich beneficial source in phytotherapeutic which shows anticancer, and radio-protective properties. The study aims to highlight the antiproliferative properties of *Aloe barbadensis* crude leaf extract, which can be used for the new herbal formulations development for the prevention and treatment of malignant cells. Therefore it can be concluded that *Aloe barbadensis* may be considered as a house of many pharmacological active ingredients and useful for the growth of new herbal formulations.

Keywords: *Aloe Barbadensis*, Phytochemicals, Antiproliferative , Anti-Cancer effect

ICFBRP17

VIRUS BEHIND INFERTILITY IN WOMEN (HUMAN HERPES VIRUS):-A NOVEL HUMAN PATHOGEN

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Human herpes virus (HHV) is notable potent influencing the reproductive system of females. Among the world, women infertility is throwing major challenges to researchers as well as doctors also. Through investigation, it was proved that, this HHV virus has become one of the major peril and thus top the charts for causing infertility in women. But the interesting fact that researchers have found human herpes viruses (HHV) that potentially contaminated the lining of uterus and is behind the unexplained infertility in women. Approximately 25% of female infertility occurrences are unexplained, leaving women with few options other than expensive infertility treatments, according to the earlier study. Evidences showed that the HHV-6A virus infects the lining of uterus in 43-45% of women with unexplained infertility. The virus can productively infect CD8+T cells, natural killer cells, according to paper. In the first stage these virus seems to activate immune cells called Natural Killer cells or NK cells in the uterus and lead those cells to produce chemicals called cytokines- tools the immune system that uses to orchestrate an attack on a foreign invader, like a virus. From the University of Ferrara, Roberto Marci stated his view accordingly, "Our study indicates, for first time, that HHV-6A infection might be a major factor in female unexplained infertility development and to sustain a successful pregnancy with a possible role in modifying inner NK cells immune profile and ability." It can be diagnosed through a biopsy of the uterine lining. Meanwhile, the scientist at Harvard Medical School named Anthony stated that these discovery may lead to improved treatments for a large subset of infertility women if they are substantiated.

Keywords:- Human Herpes virus, Infertility, Natural Killer cells, Cytokine tools, Successful pregnancy.

ICFBRP18

MEDICINAL PLANTS IN THE SELECTED URBAN AREAS OF KRISHNAGIRI DISTRICT, TAMILNADU

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This study was carried out in selected urban areas of Krishnagiri District. A total of 35 plant species belongs to 21 families of medicinal plant species have been recorded in study site. Among the families Solanaceae has been highly preferred for medicinal purpose by local people. Apart from Solanaceae, Fabaceae (3Species in each), Lamiaceae (3 Species), Amarantheceae (2 Species), Asteraceae(2 Species) were highly used by local people. *Androgrphis paniculata*, *Euphorbia hirta*, *Leucas aspera*, *Ocimum sanctum* were highly used to cure various diseases in study site such as Diabetic, Cold, Fever, Skin problem, Cough, Small wound and Headache. Mostly herbaceous species (11 Species) are highly dominant in the study site followed by trees (16 Species), shrubs (6 Species) and climbers (2 Species). This study will be useful for conservation of medicinal plants in urban areas also. This is the first study to reveal the medicinal plants in urban areas. In future definitely this study will be more useful to conserve Medicinal Plants as well as our future generation also.

Key Words: Urban Areas, Medicinal Plants, Conservation.

ICFBRP19

HISTOPATHOLOGICAL STUDIES ON *RIVEA HYPOCRATERIFORMIS* (DESR.) CHOISY.

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Interest in medicinal plants as reemerging health aid has been fuelled by rising costs of prescription drugs in the maintenance of personal health and well-being and bioprospecting of new plant derived drugs. Histopathology is defined as the diagnosis and study of diseases of the tissues and involves examining tissues and or cells under a microscope. It is the gold-standard techniques for the evaluation of biological specimens. Therefore, there is a need to explore their uses and to conduct pharmacological studies to ascertain their medicinal properties. The selected plant *Rivea hypocrateriformis* is a large climber, found in Kokan, Deccan, Poona, Western peninsula, Assam and is considered as the botanical source of Phanji, a classical drug of Ayurveda. The histopathological studies of the excision wound rat skin shows fragments of tissue lined by stratified squamous

epithelium with adjacent areas having neutrophilic abscess and necrotic debris and no evidence of healing of wound in control. In standard, the histopathological studies of the excision rat skin shows fragments of tissue with proliferation of thin walled vessels, dermis with granulation tissue and mild lymphocytic infiltration and the adjacent areas having dense fibro collagenous tissue. The histopathological studies of the excision wound rat skin on extract 1% having dense proliferation of thin walled vessels and regenerating of epithelium, foci of necrotic debris and areas of fibro collagenous tissue, few foci having deposition of refractive protenaceous substance. Focal areas of granulation tissue with proliferation of the vessels and dense areas of fibrosis with focal inflammation were noted in extract 2%. Thus, the methanol extract of *Rivea hypocrateriformis* shows a good healing response to the wound and also better than the standard drug.

Key words: Ayurveda, collagenous tissue, epithelium, *Rivea hypocrateriformis* and wound

ICFBRP20

SIGNIFICANCE OF PLANT GROWTH PROMOTING RHIZOBACTERIA (PGPR)

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Plant growth-promoting rhizobacteria (PGPR) are an important source of biofertilizers that colonize on plant roots. They play a significant role in sustainable agriculture through several processes such as nitrogen fixation, phosphate solubilization, potassium solubilization, siderophore production, phytohormone production (indole-3-acetic acid, cytokinin, gibberellin, ethylene), antibiotic production, lytic enzymes, ammonia production, and HCN production, etc. They facilitate health, growth, yield, development, and productivity of plants, cereals, crops, vegetables, and fruits, etc. They assist in the biological control of phytopathogenic infectious diseases as well as abiotic stresses. They also reduce the use of synthetic fertilizers, pesticides or insecticides, etc. Several bacteria like *Pseudomonas putida*, *P. fluorescence* applied as biological control agent at large scale. They are classified into two categories extracellular plant growth-promoting rhizobacteria and intracellular plant growth-promoting rhizobacteria. Several bacterial genera like *Agrobacter*, *Azotobacter*, *Azospirillum*, *Bacillus*, *Erwinia*, *Bradyrhizobium*, *Mesorhizobium*, *Arthrobacter*,

Pseudomonas, Flavobacterium, and Frankia, etc. are found in agro-ecosystem. They improve soil quality, texture, and fertility as well as maintain nutrient elements in the soil. The functional activities of PGPR are as biofertilizers, Phyto-stimulators, rhizo-remediators, and biopesticides.

Keywords: PGPR, biofertilizers, nitrogen fixation, phosphate solubilization, biological control.

ICFBRP21

SEASONAL VARIATION OF PHYSICO-CHEMICAL PARAMETERS AND FISH DIVERSITY OF MAN RIVER OF DHAR DISTRICT, M.P. (INDIA)

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This research aimed to determine the water quality and fish diversity in Man River. Rivers are most important source of drinking water for living being on the earth. Present study was carried out from October 2017 to September 2018. The study deals with seasonal variation of the physico-chemical parameters of Man river. Water samples were collected from five sample stations. The physico-chemical parameters such as Temperature, pH, Alkalinity, Hardness, Calcium, Chloride, Phosphate, Nitrate, DO (Dissolved Oxygen), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), Transparency etc, were investigated (A.P.H.A., 2005). The permissible limits of physico-chemical parameters in various seasons, evaluated for domestic and irrigation purpose. The work highlights the condition of this river water in various seasons with respect to the parameters mentioned above. Altogether 15 fish species belonging to 3 Orders (Cypriniformes, Ophiocephaliformes, Perciformes) and 5 Families (Cyprinidae, Claridae, Heteropneustidae, Ophiocephalidae, Mastacembelidae).

Key words - Seasonal variation, Water, Physico-chemical parameters, Fish Diversity Man River.

ICFBRP22

ORGANIC FARMING GREEN VEGETABLES CULTIVATIONS - A SYSTEM APPROACH TO MEET SUSTAINABILITY CHALLENGE

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Organic farming is a technique, which involves cultivation of plants and rearing of animals in natural ways. The term “**organic**” refers to the way agricultural products are grown and processed. While the regulations vary from country to country, in the India **organic** crops must be grown without the use of synthetic pesticides, bioengineered genes (GMOs), petroleum-based fertilizers, and sewage sludge-based fertilizers. Organic fertilizers are fertilizers derived from animal matter, animal excreta (manure), human excreta, and vegetable matter (e.g. compost and crop residues). Naturally occurring organic fertilizers include animal wastes from meat processing, peat, manure, slurry, and guano. Prepare the soil before planting; choose the right plants for your region and conditions, Plant flowers in or near the garden to attract bees and other pollinators, Make your own organic compost and mulch, Purchase seeds or starter plants from reputable sources, Plant heirloom varieties when possible. Organic farming continues to be developed by various organic agriculture organizations today. In 2020 it was estimated that over 80 % of consumers bought some organic products. Approximately five per cent of consumers are considered to be core organic consumers who buy up to 50 per cent of all organic food. This process involves the use of biological materials, avoiding synthetic substances to maintain soil fertility and ecological balance thereby minimizing pollution and wastage. In other words, organic farming is a farming method that involves growing and nurturing crops without the use of synthetic based fertilizers and pesticides. Also, no genetically modified organisms are permitted.

Key Words: Organic farming, pesticides, Green vegetables, Nutrition.

ICFBRP23

EVALUATION OF PHYTOTOXIC AND CYTOTOXIC POTENTIAL OF ESSENTIAL OIL OF *VITEXNEGUNDO* L.

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Weeds are the unwelcome plants that have high potential to colonize disturbed habitats as well as cultivable land. In agricultural fields, these interfere with the growth and development of crops and thus, reduce the quality and quantity of the agricultural produce and cause enormous losses to the farmers. The excessive use of synthetic herbicides in agriculture to control the weeds has steered the development of resistance in weeds along with the production of toxic effects on the environment. A study was, therefore, planned to investigate the phytotoxic and cytotoxic potential of essential oil extracted from *Vitexnegundo* L. GC-MS analysis of oil reveals the presence of β -Caryophyllene a sesquiterpenes as the major compounds. With increase in the concentration of the essential oil, significant reduction in the % germination, coleoptile and root length of the tested weeds (*A. fatua* and *E. crus-galli*) were observed as compared to the control. Furthermore, significant decrease in the MI and increase in aberration percentage were also observed in the root of *A. cepa* treated with different concentration of essential oil. The study concludes that essential oil of *V. negundo* possesses herbicidal activity and thus can use as an alternatives to agrochemicals in sustainable agriculture system.

ICFBRP24

BIONANOTECHNOLOGY- A REVIEW

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Today the matter of basic research and development that is happening in laboratories all over the world is Nanotechnology & Biology, together called as BIONANOTECHNOLOGY. It is defined as the incorporation of biological molecules into nanoartifacts. Bio nanotechnology promises a sustainable alternative for **restoring and recreating physiological functions** with a “systems approach” comprising of structural and functional forms. It takes advantage of the knowledge of features acquired by living organisms in the course of evolution for technological purposes. It derives inspiration from human physiology to evolve complex artificial systems, through the fusion of biological systems with nanotechnology.

I would like to highlight the current trends in the hybrid field of bio nanotechnology. As biotechnology deals with metabolic and other physiological processes of biological subjects including microorganisms, in combination with nanotechnology, bio nanotechnology can play a vital role in developing and implementing many useful tools in the study of life.

ICFBRP25

DOCUMENTATION REVIEW FOR BORASSUS FLABELLIFER

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Borassus flabellifer L. is a nature gift to this mankind. It belongs to Arecaceae family.

It is a state Tree of Tamil nadu. This plant plays a vital role in ecological, medicinal, economical and sociological aspect and it can withstand natural calamities. *Borassus flabellifer* L. found widely in tropical and arid countries ranging from India through south-east Asia to new Guinea. It is closely associated with the rural livelihood, cottage & Agar-based Industries of Indian economy. Now a days *Borassus flabellifer* L. population is in the verge of endanger condition. So we have to conserve the *Borassus flabellifer* L. for future generation utilization. Through micro propagation we are going to enrich the population of *Borassus flabellifer* L. *Borassus flabellifer* L. is widely used as edible, non-edible and value added products to this world.

Key Words : edible, non-edible value added products, State Tree of Tamil nadu.
