TWO DAYS NATIONAL CONFERENCE ON

Microbiology: Recent Trends in Research Technology, Development and Future Aspects

April 07-08, 2023

Souvenir Cum Abstracts/ Proceedings Book




ORGANIZED BY

MASTD

MICROBIOLOGICAL ASSOCIATION FOR SCIENCE AND TECHNOLOGY DEVELOPMENT (MASTD), LUCKNOW, U.P.INDIA

&

GeneSpy
Creating significant value through strategic innovations

GENESPY RESEARCH SERVICES PVT LTD. MYSURU, KARNATAKA, INDIA

EDITORS: * Dr. Ajay Kumar Singh * Dr. Talluri Rameshwari KR * Dr. Kshitij Singh*

E-Mail: mastd2021@gmail.com, Website: mastd.org.in

Conference Programme Schedule

MASTD: 7-8th April 2023

Google Link for the First Day Conference: meet.google.com/fkb-weoc-boa

DAY 1: 07th April 2023

Time	Sequence of Events
10:00am to 10:30am	Inauguration Welcome Speech About the Conference Talk by Convener
10: 30am to 11:00am	Key note address **Prof. Ram Chandra** Department of Environmental Microbiology Babasaheb Bhimrao Ambedkar University, Lucknow, UP
11:00am to 11.30am	Plenary lecture-2 **Dr. Irfan Khan** Molecular Reproduction Unit, Rajiv Gandhi Centre for Biotechnology Thiruvananthapuram Tamil Nadu
11:30am to 12:00pm	Tea break
12:00am to 12.45pm	Plenary lecture-1 **Dr. Shobha Rani P** CEO & Director Genespy Research Service Pvt. Ltd. Mysuru, Karnataka
12:45pm to 01.30pm	Plenary lecture-3 **Mrs. Manasa R** Lecturer Department of Food and Nutrition Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka
1:30pm to 2:00 PM	Lunch break
2:00pm to 3:30pm	**Oral Presentation** 1. **Sibiraj M** Title: Biochar: Multifarious Molecules For Environmental Remediation 2. **Karan Saini** Title: Biosurfactants: The Multifaceted Tools For Environmental Remediation 3. **Varun** Title: Screening Of Proteolytic Bacillus Species From Detergent Contaminated Soil 4. **Akarsh C S**

	Title: ANTI – LISTERIAL PEPTIDE FROM NATIVE PROBIOTIC CULTURE FOR FOOD PRESERVATION **5. Kavya. P** Title: Screening Of Pectinolytic Bacteria From Vegetable Waste **6. Kansara Harsh Dhanraj** Title: Current Innovation In The Pharmaceutical Excipients Using Polyvinyl Pyrrolidone **7. Punith M S** Title: Probiotic Encapsulation With Vegan Protein: Survival Under Gastric Condition **8. Sonam Tripathi** Nil **9. Cevella Saritha** Title: Rationally Designed Ionic Covalent Organic Networks (Icons) With Efficient Antimicrobial Activities **10. Vinod Kumar Rajana** Title: Mechanistic Studies Of Allantoin Silver Nanoparticles Against Parasite And Fungus **11. Arti Priyadarshini** Title: Regulatory Roles Of HCMV Mirnas On Proapoptotic Genes. **12. Bhuvanesh G** Title: Agriculture Land Suitability Analysis Using GIS Techniques: A Case Study Of Hanur Taluk,Chamarajanagar District, Karnataka **13. Dr. Poonam Kumari Gautam** Title: A Linear Study Of Thermal Bio-Convection Of Jeffrey Nanofluid Sheet Deferment Over Thermotactic Microorganisms In Porous Medium **14. Pooja Sharma** Title: To Investigate The Performance Of Food Aste Anaerobic Digestate On Solanum Lycopersicum Renewable Growing Media Consisting Of Biochar And Their Microbiota **15. Manisha Bhatti** Title: Emergence Of Biotechnology In Medicine **16. Ms Diksha Kumari** Title: Exploring The Anti-Leishmanial Potential Of Newly Synthesized Eugenol Derivatives **17. Koushik G.C** Title: Development And Quality Evaluation Of Idli From Foxtail Millet (Setaria Italica) **18. Thejashwini H.M** Title: Development And Quality Evaluation Of Idli From Proso Millet (Panicum Miliaceum)
3:30pm to 4:30pm	**Poster presentation** **1. Shailendra S. Suryawanshi** Title: *In-silico and In-vitro Approach towards Development of Plant Derived Anti-bacterial Agents as Histidine Kinase Inhibitors from Tabernaemontana divaricata* **2. Chetan Hiremath** Title: *Circulating Hepatitis B virus Genotypes* **3. Mehmuda hussain** *Detection of bacterial microbiome from prostate tissue samples*

	4. Poonam Dwived **Title:** *Herbs an advanced approach to induce apoptosis for triple - negative breast cancer cells.* **5. Satheesh S** Title: *Green Synthesis of Copper Nanoparticles coated Lactobacillus acidophilus by using Ocimum tenuiflorum and screening its antibacterial activity* **6. Maheshwari.K.M** Antimicrobial activity of Aloevera (Aloe barbadensis) **7. Damini.K.R** Antimicrobial activity of Chamomile (Matricria chamomilla) **8. Vedashree.P.K** Antimicrobial activity of Rosemary (Rosmarinus officinalis)
3.30pm to 4.30PM	**21. Saniya M** Title: Development and quality evaluation of Dosa from Proso millet (Panicum miliaceum) **22. Bhoomika B. M** Title: Development and quality evaluation of Idli from Brown top millet (Urochloa ramosa) **23. Pooja N.S** Title: Development and quality evaluation of Dhokla from Pearl millet (Pennisetum glaucum) **24. Nisarga R** Title: Development and quality evaluation of Dhokla from kodo millet (Paspalum scrobiculatum) **25. Kavya M R** Title: Development and qulity evaluation of Punugulu from Sorghum (*Sorghum bicolor*) **26. Anitha Tendulkar C.M** Title: Development and quality evaluation of Dhokla from proso millet (Panicum miliaceum) **27. Divyashree S** Title: Development and quality evaluation of Punugulu from Foxtail millet (Setaria italica) **28. Surabhi M** Title: Development and quality evaluation of Idli from Little millet (Panicum sumatrense) **29. Rashmi.S** Title: Development and quality evaluation of Bhatura from kodo millet (*Paspalum scrobiculatum*) **30. Payal.R** Title: Development and quality evaluation of Dosa from Pearl millet (Pennisetum glaucum)
4.30 PM	**Tea Break** **Wind UP Conference**

Public Health Hazards of Industrial Waste and their Management for Improvement of Rural Economy by Innovative Technology

KSHITIJ SINGH and PROF. RAM CHANDRA

Department of Environmental Microbiology, School for Environmental Sciences, Babasaheb Bhimrao Ambedkar University (A Central University), Lucknow-226 025, Uttar Pradesh, India.

ABSTRACT

Pulp and paper industry and distillery is among the most complex industrial waste as source of environmental pollution. Presently, there are more than 319 distilleries based on sugarcane molasses which discharges around 15 lit of spent wash per liter of alcohol production. Similarly, there is more than 400 pulp and paper industries which discharges huge amount of wastewater as source of environmental pollution. More than 200 cubic meter of waste water is generated during production of 1 tone of paper. The studies have revealed presence of various heavy metals (i.e. mg Kg-1) Cu (73.62), Cr (21.83), Mn (126.30), Fe (2403), Pb (16.33), Ni (13.43) and Zn (210.15) along with organic compounds. The melanoidins which is a major colourant of distillery waste and chemically complex in nature have strong binding tendency with various metals. The lignocellulosic waste discharged from pulp paper have also similar properties. Gas chromatography-mass spectrometry (GC-MS) analysis showed dodecanoic acid, octadecanoic acid, *n*-pentadecanoic acid, hexadecanoic acid, β-sitosterol, stigmasterol, β-sitosterol trimethyl ether, heptacosane, dotriacontane, lanosta-8, 24-dien-3-one, 1-methylene-3-methyl butanol, 1-phenyl-1-propanol, 5-methyl-2-(1-methylethyl) cyclohexanol, and 2-ethylthio-10-hydroxy-9-methoxy-1,4 anthraquinone as major organic pollutants along with heavy metals as androgenic and mutagenic compounds present in distilleries and pulp paper industries which are not known yet much. The researcher have showed that Klebsiella pneumoniae (KU726953), Salmonella enterica (KU726954), Enterobacter aerogenes (KU726955) and, Enterobacter cloaceae (KU726957) are found very potential for degradation and decolorization of wastewater with ligninolytic activity. Similarly, the rhizospheric bacteria growing along with root of Cannabis sativa, Parthenium hysterophorus, Cynodon dactylon and Ricinus communis which showed very high phytoextraction potential of various heavy metals from complex-organo-metallic waste degradation. The Bacillus and Stenotrophomonas species were also found capable for degradation of various organic acid and other endocrine disrupting chemical rich distillery waste as pioneer microflora. These properties of bacteria and plants may be converted for various value added products for improvement of rural economy such as organic manure production from sludge and biofuel production from Ricinus communis and fibre production from Cannabis sativa. Similarly, the Parthenium hysterophorus and other weeds may be converted into biocompost with innovative approach as a green technology for sustainable development.

Male Germ Cell Specification and Establishment: role of CNNM1 in regulation of oxidative stress

Dr. Irfan Khan and Pradeep Kunar G

Molecular Reproduction Unit, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram

ABSTRACT

Reproductive health is an understudied concern in the public health sector in developing countries, yet it can have a staggering impact on society. Numerous factors, including lifestyle, the environment, health, and pathogenic microorganism infections, can cause male infertility. Microbial infection in the male reproductive system is one of the key factors affecting male fertility. Oxidative stress and inflammation caused by these infections negatively affect spermatogenesis, leading to male infertility. CNNM1 is one of the aberrantly expressed genes in the testes of a subset of infertile men. It belongs to the Ancient Conserved Domain Protein family and is highly expressed in the brain, testis and ovary. In murine models, postnatal testicular expression of *Cnnm1* was higher in the neonates than in the adult stages. The spatiotemporal expression of CNNM1 in postnatal testis showed very pronounced expression in the spermatogonial cells positioned towards the periphery of the seminiferous tubule co-localized with Spermatogonial Stem Cells (SSC) markers. Further, the expression of *Cnnm1* in mice during gonocyte to spermatogonia transition (GST) showed expression after gonad development (E 13.5) compared to Primordial Germ Cells (PGC), and a significant increase in expression of *Cnnm1* during the PND 2-3 suggesting its role in the establishment of SSCs during the initial stages of development. *In vitro* studies also showed that the loss of *Cnnm1* expression is associated with an altered cell cycle, and cells were primed towards differentiation. Global proteome analysis of CNNM1 knockdown in C18-4 spermatogonial cells identified several proteins related to oxidative stress, nucleic acid metabolism, male germ cell development and various pathways involved in cell cycle regulation to be altered. Oxidative stress is one of the essential processes for SSC self-renewal and proliferation, CNNM1 is found to regulate several oxidoreductases and confers the protection from high reactive oxygen species (ROS) induced damages in spermatogonial cells. Our study provides interesting insights into the functional role of CNNM1 in the proliferation and survival of mouse spermatogonial cells.

Mood Change by tiny microbes: Epigenetics- a new frontier in probiotic research

Dr. Shobharani. P

Founder and CEO, GENESPY Research Services, Mysore

Email ID: genespyresearch@gmail.com

"**Epigenetics**" is an emerging area of research where in, influences of environmental factors on person behavior is studied. Trillions of gut microflora which are prevalent throughout the life time have intimate relationship with the host and exert significant impact on host physiology and pathology. This microflora plays multifaceted role in body homeostasis, stimulation of immune system, fermentation of food, synthesis of vitamins and maintenance of intestinal epithelial function. Recent accumulating evidences support the role of gut microbiota in host epigenetics through modification of gene expression thereby affecting homeostasis and health status. Studies with advance computational tools of metagenomics have been focused on understanding the crosstalk between microbiota and epigenetics. Under GUT microbial dysbiosis significant changes occurs leading to several diseases. Probiotics are "live micro-organisms which can provide health benefits on the host when administered in adequate amounts". Administration of probiotics has shown to decrease dysbiosis and led to the normal regulation of the gut membrane integrity and permeability. In addition to intestinal tract protection, probiotic also help in amelioration of many diseases including cardiovascular disease, diabetes and obesity. The epigenome study suggests that the activity of probiotics and their metabolites are linked with chromatin remodeling as a function of intrinsic histone deacetylase inhibition. Short chain fatty acids (SCFAs) are the main probiotic metabolites that have been considered as class of epigenetic drugs with histone deacetylase inhibiting activity (HDACi) which has a vital role as anti-cancer agents with strong anti-proliferative effects on tumor cells. In this talk, brain and gut interaction will be explained along with microbial dysbiosis and problem associates. Talk will be continued with probiotics, their role, market survey, characteristic features and their role in epigenetics. Probiotic factors regulating the epigenetic action will be briefed out.

Biochar: Multifarious Molecules for Environmental Remediation

Sibiraj Murugesan* and Gaurav Saxena

School of Biotechnology, Shoolini University of Biotechnology and Management Sciences, Kasauli Hills, Solan, Himachal Pradesh, India 173 229

ABSTRACT

Biochar is a rapidly evolving, sustainable waste management and soil improvement solution with a broad array of applications in the fields of agriculture, environment, and climate management. It is a type of charcoal produced by pyrolyzing biomass in the absence of oxygen and its efficacy is determined by its source (hay, pinecones, or sludge), particle size, pyrolysis temperature (higher temperatures burn off more nitrogen), the quantity used, and whether it is applied on the soil's surface or remediation studies. It has heterogeneous physical and chemical properties that help to remediate contaminants, increase carbon sequestration, reduce greenhouse gas emissions, etc. Since it immobilizes heavy metals and organic contaminants, biochar amendment is a promising approach for environmental remediation. It can stabilize and reduce heavy metals such as Cd, Cu, Ni, Pb, and Zn through diverse mechanisms including sorption (ion exchange, surface complexation, and electrostatic attraction) and chemical precipitation. Activated biochar, like activated charcoal, may be used in water and wastewater treatment to absorb contaminants such as pesticides, dyes, heavy metals, and pathogens while also restoring nutrients. However, technical, and practical barriers to large-scale biochar application have been reported, and the priming effect should be further explored. Therefore, this work was focused to review the production, characterization, and applications of biochar in contaminants removal and wastewater treatment for environmental safety.

Keywords: Biochar, Bioremediation, Dye degradation, Wastewater treatment, Characterization, Environmental Safety

Corresponding Author is at: School of Biotechnology, Shoolini University of Biotechnology and Management Sciences, Kasauli Hills, Solan, Himachal Pradesh, India 173 229; Email: murugansibiraj@gmail.com

Biosurfactants: The Multifaceted Tools for Environmental Remediation

Karan Saini* and Gaurav Saxena

School of Biotechnology, Shoolini University of Biotechnology and Management Sciences, Kasauli Hills, Solan, Himachal Pradesh, India 173 229

ABSTRACT

The discovery of biosurfactants resulted from the search for environmentally benign ways to eliminate xenobiotic pollutants, such as petroleum hydrocarbons and other organic pollutants, which harm the environment and human health. As opposed to chemical surfactants, which are currently chosen due to their ease of availability and low production costs, biosurfactants are increasingly understood to be utilized for the removal of pollutants from nature due to their low level of toxicity and great biodegradability. Biosurfactants are potential amphiphilic (hydro-philic/phobic) biochemicals that can be easily manufactured using less expensive substrates used by microorganisms. They are now being used in the sustainable remediation of petroleum and organic pollutants. This work focuses on the structure, classification, characteristics, synthesis, influencing factors, and techniques for screening and characterization of biosurfactants produced by microorganisms. Further, applications of microbial biosurfactants in the remediation of petroleum and organic contaminants are also addressed, along with solutions to problems preventing the manufacturing of biosurfactants at an affordable price and future research directions.

Keywords: Biosurfactants, Bioremediation, Petroleum Hydrocarbons, Organic Pollutants, Environmental Safety

Corresponding Author is at: School of Biotechnology, Shoolini University of Biotechnology and Management Sciences, Kasauli Hills, Solan, Himachal Pradesh, India 173 229; Email: karansaini3130@gmail.com

Screening of proteolytic Bacillus species from detergent contaminated soil

[1]Varun B., [2]Ashwini. P., [3*]Shobharani. P

[1,2]Department of Microbiology, School of Life sciences, JSS AHER, Mysuru

[3]GENESPY Research Services, Kalidasa Road, VV. Mohalla, Mysuru

#Email: genespyresearch@gmail.com

ABSTRACT

Proteases are group of enzymes that have appreciable role both in synthesis and degradation. They are potential candidate in several industries including food, leather, nutraceutical, pharmaceutical and detergent industries. This study examined aims to isolate and characterize *Bacillus* species from detergent contaminated soil with a view to apply in detergents to increase its stain removing efficiency. In the current study, the soil samples contaminated with detergents were collected from different laundries sites of Mysuru. The serially diluted soil samples were screened for *Bacillus* specie and checked for proteolytic activity on skim milk agar media. Accordingly, 10 isolates were selected showing the presence of zones of clearance on skim milk media. Quantification of protease activity using azocasein assay showed maximum proteolytic activity (31.8U/mg) in the culture B9A. Production study at displayed highest (37.5U/mg) protease enzyme after 24 h of incubation. Further studies will be conducted on purification of protease and its application for stain removal.

Anti – Listerial Peptide From Native Probiotic Culture For Food Preservation

[1]Akarsh C S[,] [2]Dr. Manasa Ravindra Walmiki., [3]*Shobharani. P

[1,2] Department of Microbiology, School of Life sciences, JSS AHER, Mysuru

[3] GENESPY Research Services, Kalidasa Road, VV. Mohalla, Mysuru

Email: genespyresearch@gmail.com

ABSTRACT

Lactic Acid Bacteria (LAB) play a significant role in bio-preservation and contribute to the extension the shelf life of foods and food products. Bacteriocin, an antimicrobial compound produced by LAB, inhibits spoilage bacteria that are responsible for food degradation. Listeria monocytogenes is one of the bacteria involved in food poisoning, food degradation, and a number of illnesses that affect both humans and animals. The current study was conducted to screen the bacteriocin producing LAB from wheat dough that has anti-listerial compounds. Around 25 samples of dough were screened and the isolates were selected based on the activity against *Listeria monocytogenes.* Zone of inhibition ranged from 8-14 mm diameter. These isolates were characteristically Gram- Positive and Catalase negative. Partial purification and characterization of anti-listerial peptide of isolates were conducted and application of anti-listerial peptide for food preservation will be conducted .

Current Innovation in the Pharmaceutical Excipients Using Polyvinyl Pyrrolidone

Mr. Kansara Harsh Dhanraj, and Dr. Suvarna Bhadane

ABSTRACT

The N-vinyl-pyrrolidone on polymerization gives a water soluble polymer Polyvinylpyrrolidone (PVP). PVP is a polymer use as an excipient in formulation development of broad novel controlled delivery systems. PVP use in formulation because it is an inert, non-toxic, temperature-resistant, pH-stable, biocompatible, biodegradable polymer that use to encapsulate and cater both hydrophilic and lipophilic drugs. Derivative of PVP has exceptional beneficial chemical properties these properties are depend upon the molecular weight. The PVP can conjugate with poorly soluble drug by Graft copolymerization or other techniques and release of drug can change to control or sustained release. The present data provide the mechanical, chemical, physiochemical properties and synthesis of derivative of PVP use in the drug, gene, and cosmetic delivery.

Keywords: Polyvinylpyrrolidone, Povidone-iodine, Polymer, Drug delivery, Conventional dosage forms

Probiotic Encapsulation With Vegan Protein: Survival Under Gastric Condition

1Punit. MS., 2Umamaheshwari. S., 3*Shobharani. P

1,2Department of Microbiology, School of Life sciences, JSS AHER, Mysuru 3GENESPY Research Services, Kalidasa Road, VV. Mohalla, Mysuru

Email: genespyresearch@gmail.com

ABSTRACT

Probiotics are living microorganisms that can confer numerous health benefits when consumed in an adequate amount. To show beneficial effects, these bacteria have to pass through the digestive barrier including salivary enzymes, acidic pH of the stomach, alkaline condition, and bile concentration in the intestine as well as several digestive enzymes. During product development, these cultures have to go through several processing steps and maintain adequate viable count to exert beneficial effects. In this context, several techniques including physical and chemical methods are applied to maintain the viability. In the current study, we used the encapsulation technique to increase survival efficiency. Encapsulation technology involves the enclosure of culture with the proper binding material before delivering it to the system. We compared the encapsulation efficiency of chemical compound (sodium alginate) and vegan proteins to improve the survival of probiotics in the digestive tract. According to the results obtained probiotic (P1) showed maximum viability with gelatine and probiotic (P2) with sodium alginate. Among vegan proteins, soy protein hydrolysate encapsulation showed better survival than whey protein hydrolysate and pea protein hydrolysate. SEM analysis revealed a proper covering of protein around the culture. Survival in salivary, gastric and intestinal juice demonstrates the efficiency of the encapsulation technique. In the future, it will be applied to study proficiency in juice under storage.

Rationally Designed Ionic Covalent Organic Networks (iCONs) with Efficient Antimicrobial Activities

Atikur Hassan,[§] Cevella Saritha,[§] Vinod K. Rajana, Debabrata Mandal, and Neeladri Das*

ABSTRACT

Two unique ionic covalent organic networks (iCONs) incorporated with guanidinium motifs were obtained and characterized by various techniques. Upon 8 h of treatment with iCON-HCCP (250 μg/mL), >97% killing of Staphylococcus aureus, *Candida albicans*, and *Candida glabrata* strains was observed. Antimicrobial efficacies against bacteria and fungi were also evident from FE-SEM studies. High antifungal efficacies also correlated well with >60% reduction of ergosterol content, high lipid peroxidation, and membrane damage leading to necrosis. Also, prove that killing is associated with iCONs' favorable interaction with specific lipid-rich membranes rather than simple electrostatic interaction between iCONs and microbial membrane components. The complete ineffectiveness of iCONs against the multi-drug-resistant *E. coli* strain indicates that their binding and entry are severely compromised due to the lipopolysaccharide-enriched outer layer and high expression of drug efflux pumps in those resistant strains. So, iCONs of a similar type, alone or in combination with trapped antibiotic/antimicrobials, can be better suited for antibacterial and antifungal applications.

Synthesis, Characterization and Mechanistic Studies on Allantoin Synthesized Silver Nanoparticle Against Parasite And Fungus

Rajana Vinod Kumar, Cevella Saritha, Dr. Debabrata Mandal

National Institute of Pharmaceutical Education And Research (NIPER), (Department Of Biotechnology, NIPER, Hajipur, India) Email: vinoddhniper@gmail.com. Corresponding author: debabrataman@gmail.com

ABSTRACT

Background: Allantoin is produced by uric acid oxidation and the end product of purine catabolism. Due to allantoin's anti-oxidant, anti-inflammatory, pain-relieving, and gastroprotective properties it is used in topical formulations and cosmetic products extensively[1]. Allantoin is also present naturally in cow urine and believed to provide antibacterial efficcay. Till date no studies was done for antiparasitic and antifungal efficacy of allantoin. **Aim:** We wanted to explore the antimicrobial potential of allantoin and allantoin-synthesized silver naopartcles (Aln-AgNP) against parasite and fungus with a possible mechanism of action. **Methodology:** Aln-AgNP was synthesized by using allantoin as reducing agaent and characterized by UV, FTIR.XRD and DLS studies. Its size was found to be 128.5 nm, PDI of 0.228 and zeta potential of -8.98 mV. Even with a dose of >500 µg/ml there is no cytoxicity of Aln-AgNP proving its safety for further use. **Results:** Antileishmanial IC_{50} was ~8 µg/ml for Aln-AgNP after 48 hr whereas free allantoin is less effective with an IC50 of > 40 µg/ml. Membrane damage and morphological changes induced by Aln-AgNP are visible in FE-SEM studies. Late apoptosis were observed in FACS studies for parasites treated with Aln-AgNP. Cell cycle analysis had shown arrest of cells in S phase.. S phase is required for DNA replication. In parallel, proteomics studies have shown the down-regulation DNA replication proteins (ribosomal proteins), the key protein in replication of the parasite.Metabolomics also shown sphingolipid pathway and down regulation ceramide L.aspergine,tryptophan aminoacids which are crucial for leishmania parasite survival. Aln-AgNP also shows very high antifungal efficcay on *C. albicans* and *C. glabrata* strains with an IC50 < 20 µg/ml. **Conclusion:** Natural compounds synthesised metal nanaoparticles will show combined activity with less toxicity against lesishmania and fungal diseases.

Regulatory Role Of HCMV Mirnas On Proapoptotic Genes

Arti Priyadarshini and Dr. G.Sunil Babu

Department of Biotechnology,
Babasaheb Bhimrao Ambedkar University, Lucknow-226025
E-mail id - artipsrk@gmail.com

ABSTRACT

Human Cytomegalovirus (HCMV) infects about 70% adults in developed countries and 100% in underdeveloped countries. The virus causes primary infection in first contact with a person and later, the second type of infection occurs when virus reactivates from latency. The third type of

infection develops through interaction with an infectious person despite natural immunity. This infection can cause complicated pregnancy, neonatal infection, and an opportunistic infection in solid organ transplant (SOT) or hematopoietic stem cell transplant (SCT) and HIV patients. For latent infections, it uses proteins and miRNAs to counter the host's antiviral arsenal. HCMV encodes miRNAs (HCMV miRNAs) to evade host immune response and regulate lytic and latent infecton. To date 15 precursors, 26 mature hcmv miRNAs, and their target molecules have been identified according to the miRNA database (www.mirbase.org). The miRNAs are 18-22 nucleotide RNA molecules that regulate gene expression based on their complimentarity to the 3' UTR of target mRNAs. Its infection in the host induces cellular stress responses and programmed cell death pathway i.e. apoptosis.

Agriculture Land Suitability Analysis using GIS Techniques: A case study of Hanur Taluk, Chamarajanagar District, Karnataka

Bhuvanesh G[1], Arun Das S[2] and Ravikumar M[3*]

[1,] Research Scholar, Division of Geo-informatics, School of Life Sciences, JSS Academy of Higher Education & Research, Sri Shivarathreeshwara Nagar, Mysuru – 570015, Karnataka, India.[2,] Professor of Geography, Department of Studies in Geography, Manasagangothri, University of Mysore, Mysore[3]Assistant Professor of Geography, Department of Geography, Sri Adichunchanagiri College of Arts and Commerce, Nagamangala, Mandya
Corresponding mail: bhuvaneshgbhuvi@gmail.com

ABSTRACT

The main goal of the study is to identify the suitability of land for agriculture in Hanur Taluk of Chamarajanagar District. The Geographical Information System (GIS) techniques, multi-criteria analysis (MCA) and weightage overlay analysis (WOA) was assigned to identify the suitability of this study in Hanur Taluk. Slope, relief, land use and land cover, drainage density, soil texture, geology, geomorphology, and rainfall, were the parameters considered in this study. The agriculture land suitability map was generated and classified into three classes such as: highly suitable, moderately suitable and not suitable for agriculture production. According to the prepared land suitability map for agriculture, it was measured that 17.78% of the study area was highly suitable for agriculture, 23.62% is moderately suitable and 58.59% is not suitable for agriculture. The area covering 23.62% was moderately suitable land for agriculture. The relief and slope are very high and accordingly the erosion degree is high in the study region.

Keywords: - Agriculture Land Suitability, Geographical Information System, Multi-Criteria Analysis. Weightage Overlay Analysis.

Emergence Of Biotechnology In Medicine

[1a*]Manisha Bhatti, [1b]Divya Dhawal Bhandari, [1c]Kamal Nabi

[1]University Institute of Pharma Sciences, Chandigarh University, Gharuan, Mohali, Punjab-140413

ABSTRACT

Presently biotechnology permits accomplishing the innovation expected to beat uncommon and incapacitating infections, diminish ecological effects, acquire cleaner and more secure energy use, and more proficient assembling processes Currently, there are numerous items created by biotechnological strategies. These strategies are valuable in medical care administrations for the prevention and treatment of rare infectious diseases. Biotechnology advancements such as fermentation processes and the development of microorganisms in suitable conditions. Thus, humans utilized fermenters in the creation of anti-microbial, catalysts, supplement parts, natural synthetics, and different materials prompted the improvement of this science. Present-day biotechnology time of improvement in which hereditary science is utilized to make changes in human existence. As of now, current biotechnology is created with time and date. This time frame started beginning around 1976 with the exchange of qualities starting with one microorganism and then onto the next microorganism. Up until that time, researchers were utilizing regular and inborn properties of microorganisms in the biotechnological processes. The present review focuses on the importance of biotechnology in medicine.

Keywords: Biotechnology, Medicine, Stem Cells, Human Genome, Targeted Cancer Therapy

Exploring the anti-leishmanial potential of newly synthesized Eugenol derivatives

Diksha Kumari [1, 3], Diksha Rani [2, 3], Parsoon Gupta [2, 3], and Kuljit Singh [1, 3, *]

[1]Infectious Diseases Division, CSIR- Indian Institute of Integrative Medicine, Jammu, 180001, India, [2]Natural Product Chemistry, CSIR- Indian Institute of Integrative Medicine, Jammu, 180001, India, [3]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, 201002, India, * Correspondence: singh.kuljit@iiim.res.in

ABSTRACT

Leishmaniasis, one of the top ten neglected tropical diseases, flourishes popularly among poverty-prone populations around the globe and is mainly endemic to Asia, Africa, America, and Europe. There is still a dearth of the gold standard treatment regimen, which occurs with a wide clinical spectrum (cutaneous, mucocutaneous, and visceral leishmaniasis). The emergence of drug resistance, long hospitalization periods, and various adverse effects of the current therapeutic regimen has incited the quest for exploring new molecules for a more efficient anti-leishmanial treatment regimen. The drug discovery process is often analogous to finding a needle in a haystack. Moreover, high genetic and phenotypic variability between *Leishmania* species and strains within species make developing broad-spectrum anti-leishmanial drugs more challenging. However, natural products in recent times have evolved as ray of hope in treating many deadly diseases. Eugenol is the major component of clove essential oil and has significant biological potential with anti-microbial properties. Herein, we have synthesized and characterized 21 eugenol derivatives, of which six compounds displayed a percentage inhibition of >80% against

Leishmania donovani parasites. The IC_{50} of the active molecules was in the range of 7-17 µM determined by Alamar blue (resazurin dye) based-cell viability assay. Further, cytotoxicity studies in J774.A1 macrophage cell lines using MTT assay confirmed the satisfactory safety index of these potent derivatives. Studies are further planned to decipher their mechanism of action and efficacy in animal model.

Evaluation of fermentation conditions to improve the sensory quality of Foxtail millet *(Setaria italica)* idli.

Koushik G C, Manasa R, Shekhara Naik, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Idli is one of the most popular fermented breakfasts consumed in india. Fermentation is one of the old methods that are used for food preservation. Process of fermentation is caused by micro-organisms. The micro-flora present during idli batter fermentation is Leuconostoc mesenteroides, Streptoccous thermophilus responsible for leavening and acidification. Fermentation evidently decreases the tannin content when millets were incorporated in idli. Foxtail millet *(Setaria italica)* is one of the ancient crops that consists of prominent levels of fibre, mineral, protein, phytochemicals and other bio-active compounds. Inspite of the nutritional benefits of foxtail millet, the consumption of this millet is less. The present study was conducted to formulate nutritious rich millet idli and comparison of the sensory qualities of different composition and fermentation time. In this study different composition of idlis (F1, F2, F3, F4, F5, F6) were prepared by incorporating Foxtail millet (0%, 20%, 40%, 60%, 80%, 100%) with Parboiled rice and Black gram dhal. Batter was fermented for 12 hours. Overall acceptability in sensory evaluation was analysed by semi-trained panelists using hedonic scale method (n=20). Further, Evaluation of fermentation time and analysis of proximate composition of product was carried out. Fermentation of the developed product was evaluated by varying in fermentation time (6 h, 12 h, 18 h, 24 h) followed by their sensory evaluation. Idli prepared by incorporating 60% foxtail millet and fermented for 12 h had highest scores in terms of sensory evaluation. Proximate analysis of acceptable variation had increased protein, fiber, iron and phosphorous levels compared to standard. This study helps to evaluate the optimum fermentation time and acceptable composition to develop idli by incorporating foxtail millet which possess hypolipidemic, low glycaemic index and antioxidant characteristics.

Keywords : Fermentation, Micro-organisms, Hypolipidemic, Hedonic scale.

Effect of Fermentation on the Sensory properties of Idli Prepared by Incorporation of Proso millet (*Panicum miliaceum)*

Thejashwini H M, Manasa R, Shekhara Naik, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Idli is a traditional breakfast food of India especially popular in South India. It is a fermented food product, which is prepared by steaming of fermented parboiled rice and black gram dhal batter. Black gram dhal is the major component in the fermentation of batter. The lactic acid bacteria responsible for the fermentation of batter. This process increases the nutritive value of idlis, gives soft and spongy texture and also improves digestibility. Proso millet is the oldest millet used by humans besides other cereals. It is rich in proteins, dietary fiber, polyphenols, vitamins and minerals such as iron, zinc, copper and manganese and its nutritive values are better than cereals. In this study different varieties of idlis were prepared by incorporating different proportion of Proso millet with Parboiled rice. Six formulations (P1, P2, P3, P4, P5, P6) containing different composition of proso millet (0%, 20%, 40%, 60%, 80% and 100%) along with rice and black gram dhal were used to prepare Idli. These formulations were analysed for their sensory attributes by hedonic scale method (n=15). The sensory scores were highest for P4 idli. The standard fermentation time was 12 hours and, in all variations, batter fermentation time was as same as standard. Fermentation time of Proso millet incorporated idli (60%) was optimized by varying fermentation time (6 – 24 h). The sensory scores were highest for the product which was fermented for 6 hrs. Proximate nutritional composition of the best accepted variation were analysed by standard AOAC method. The protein, phosphorous, iron and fibre contents were increased in millet incorporated idlis. This study documents the role of fermentation in batter characteristics and quality of idli in terms of nutrition and sensory attributes.

Key words: Fermentation time, lactic acid bacteria, millet incorporation, dietary fiber

Effect of fermentation on sensory attributes of Proso millet (*Panicum miliaceum*) Dosa

Saniya M, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Value added healthy foods are the requirement of modern society. Dosa is a thin pancake in South Indian cuisine which is made from parboiled rice, black gram dhal, fenugreek seeds, and salt. It is a fermented product and it gives the characteristic texture, aroma, and taste to the dosa

along with increased digestibility and nutritional value. Lactic acid bacteria are mainly responsible for fermentation which are naturally present in the ingredients of Dosa batter, rice and black ram. Some of the fermentation bacteria/ microbes are also provided by water and air. 20 to 30 ^{o}C is found to be highly favorable for the growth of microorganisms to boost the fermentation process. Millets are cereal crops with many health benefits with incredible nutrient rich composition. Proso millet has multiple benefits it is rich in minerals, dietary fiber, polyphenols, vitamins and proteins and it is gluten free so ideal for gluten intolerance people. In this study dosa were prepared by partially replacing rice by proso millet. Six formulations (P1, P2, P3, P4, P5, and P6) containing different composition of proso millet flour (0%, 20%, 40%, 60%, 80%, 100%) along with black gram dhal, fenugreek and salt which is used to prepare dosa. These formulations were analysed for sensory attributes (n=15). Further standardization of fermentation time and analysis of proximate composition was also carried out. Fermentation of the developed product was optimized and detected by performing variations in fermentation time (6h, 12h, 18h, and 24h) followed by their sensory evaluation. Dosa prepared with 40% of proso millet flour and fermented for 6 h had the best scores in terms of sensory scores. Dosa prepared from proso millet had more protein, fiber .This study documents the role of fermentation in batter characteristics and quality of dosa in terms of nutritional and sensory attributes. Thus acceptable product can be developed from proso millet.

Key words: Microorganism, Fermentation, Lactic acid bacteria

Effect of fermentation time on the sensorial attributes of Brown top millet *(Urochloa ramosa)* idli.

Bhoomika B M, Manasa R, Mahesh shivananjappa, Shekhara Naik.
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Idli , is a cereal-legume based fermented food ,which is widely consumed in India. Idli is prepared using Blackgram dhal and parboiled rice. The fermentation of idli demonstrates a leavening action caused by Lactic acid bacterium. Micro-organism *Leuconostoc mesenteroides* is responsible for souring and gas production in batter. Idli makes an important contribution to the diet as a source of protein, calories and vitamins, especially B-complex vitamins. Browntop millet a minor millet, contain all essential nutrients and can be used as functional food. Browntop millet is a great source of protein, dietary fibre, iron and zinc. It also act as an excellent medicine in dealing with lifestyle diseases. In this study idlis were prepared in six different variations B1, B2, B3, B4, B5 and B6 by incorporating browntop millet in different portions (0%, 20%, 40%, 60%, 80%, 100%). Batter was fermented for 12 hours. These variations were analysed for their sensorial properties (n-15). Sensory evaluation was done by semi-trained panelists using hedonic scale method. Further standardization of Fermentation time and analysis of proximate composition was carried out. Fermentation of the developed product was optimized

and detected by preforming variations in fermentation time (6 – 24 h), followed by their sensory evaluation. Idli prepared with 60% browntop millet and fermented for 12 h had highest scores in terms of sensory scores. Moreover idli prepared from browntop had more protein and crude fibre. The present study documents how the microbial growth influence the batter characteristics and quality of idli in terms of sensory attributes.

Keywords : Micro-organism, Lactic acid bacterium, functional food, Incorporation, Hedonic scale.

Development and quality evaluation of Dhokla from Pearl millet (*Pennisetum glaucum)*

Pooja N S, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food science and nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: **mayavishiva@gmail.com**

ABSTRACT

Fermentation is any metabolic process in which microorganisms' activity creates a desirable change in food products. Dhokla is a fermented food of India and is popular throughout the country. Pearl millet is an energy packed grain. It is rich in essential nutrients such as protein, dietary fiber, phosphorus, magnesium and iron. this study was conducted to develop and evaluate fermented dhokla of six different compositions P1, P2, P3, P4, P5, P6 containing Bengal gram dhal, curd with different proportions of pearl millet (0%, 20% ,40%, 60%, 80%, 100%) were developed and evaluated for acceptability using subjective and objective method by taking Bengal gram dhal dhokla as a control. these developed products were analysed for sensory attributes (n=20) and the sensory score is highest for P3 and its nutrient composition was recorded. Then fermentation time was varied in P3 formulation for 6, 12, 18, and 24 hours for evaluation of fermentation quality. The sensory score was highest for the product which was fermented for 6 hours and its nutritional composition was calculated. Proximate nutritional composition of the best accepted variation were analyzed by standard procedures.The lactic acid bacteria are responsible for the development of the characteristics dhokla flavour. Dhokla prepared from Pearl millet had more protein, fibre and iron . They are gluten free and have low glycaemic index compared to traditional Dhokla.

Keywords: Pearl millet, dietary fiber, microorganisms, fermentation, lactic acid bacteria.

Development And Quality Evaluation Of Dhokla From Kodo Millet *(Paspalum Scrobiculatum)*

Nisarga.R, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*

Department of Food science and nutrition, Yuvaraja's College (Autonomous), University of Mysore,
Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Application of fermentation technique is known to significantly enhance nutrient contents in foods and hence, this study was conducted to develop and quality evaluate fermented dhokla from kodo millet (*paspalum scrobiculatum*). Different levels of kodo millet (100g) were mixed with Bengal gram dhal and evaluated for acceptability using subjective method by taking bangal gram dhal as control. Variation (V1,V2,V3,V4,V5,V6) were made with different proportion of kodo millet (0%,1%,2%,3%,4%,5%) by taking all this variation subjective method is implemented to examining the appearance , color, flavor, texture, & all organoleptic property using semi trained panelist(n=20).From this sensory test among all the variation V4 is having highest score and it is more acceptable among all the variation V4 variation was taken and the fermentation time was vary to 6hr,12hr,18hr, and 24hr.From this variation 18hr is more acceptable that all variation. The lactic acid bacteria are responsible for the development of the characteristics dhokla flavour, while yeast produces folic acid, raise the batter volume and gives sponginess to the product ..Kodo millet dhokla is richest source of carbohydrates, protein, and dietary fiber. It is also content all essential vitamins and minerals which shows antioxidant property , lowers the blood glucose level and also lower blood pressure.

Key words :- Dhokla , antioxidant property , lactic acid

Probiotic Soy-Yogurt Fortified With Encapsulated Terminalia Chebula: A Special Emphasis On Free Radical Scavenging Activity

1Navyashree.E, 2 Umamaheshwari S., 3*Shobharani. P
1,2 Department of Microbiology, School of Life sciences, JSS AHER, Mysuru
3 *GENESPY Research Services, Kalidasa Road, VV. Mohalla, Mysuru
Email: genespyresearch@gmail.com

ABSTRACT

Fortification of food has been one of the best strategies to address malnutrition problem. Deliberate addition of valued items increases the functional properties of commonly consumed foods. In this context, Terminalia chebula extract known for its various biological properties was used to enhance antioxidant property of soy-yogurt. Free radicals interact with biological components, destroying cell structure and ultimately leading to diseases like cancer, renal failure and also ageing. Hence, soy-yogurt with radical scavenging activity would be a best way to fight oxidative

stress. In this contest, work was initiated with coating of T. chebula extract with maltodextrin and whey protein hydrolysate and then incorporating in soy-yogurt prepared using probiotic cultures. The data showed better survival of probiotics in soy-yogurt fortified with whey protein coated T. chebula extract than maltodextrin. Fortified soy-yogurt with T. chebula extract displayed potential radical scavenging efficiency as analyzed by DPPH assay. Overall, the study demonstrates the efficacy of fortified soy-yogurt in reducing oxidative stress.

In-silico and *In-vitro* Approach towards Development of Plant Derived Anti-bacterial Agents as Histidine Kinase Inhibitors from *Tabernaemontana divaricata*

Shailendra S. Suryawanshi[*1], M. S. Palled[1]

Department of Pharmaceutical Chemistry, KLE College of Pharmacy Belagavi, KLE Academy of Higher Education and Research, Belagavi-560010, Karnataka, India.

ABSTRACT

Tabernamontana Divaricata is a medicinal shrub in the Apocynaceae family. The current study attempted to extract phytoconstituents from *Tabernamontana Divaricata* leaves using various solvents and evaluate their antibacterial activity. Molecular docking analysis is used to evaluate the enzyme inhibition activity of plant phytoconstituents Conofoline, Pachysiphine, and Voacanine against Histidine kinase. The extraction was performed using appropriate solvents and the maceration and soxhlet methods. Each extract's phytochemistry was investigated using standard chemical tests for alkaloids, glycosides, flavonoids, tannins, terpenoids, phytosterols, and saponins. Each extract's antibacterial activity against Escherichia coli was tested using the disc diffusion method with Ciprofloxacin as the standard. The study's findings revealed that each extract produces different phytoconstituents with varying antibacterial potentials. The extract had good antibacterial activity against Escherichia coli, with a maximum zone of inhibition of 22.8 mm. The docking analysis revealed that the binding energies of Conofoline, Pachysiphine, and Voacanine were found to be good for antibacterial effect.

Key words: Anti-bacterial agents, Conofoline, Histidine Kinase, Molecular Docking, *Tabernaemontana divaricata*

Molecular Characterization of Circulating Hepatitis B Virus Genotypes-Belagavi Scenario

Mr. Chetan Hiremath

ABSTRACT

The term hepatitis means inflammation of liver, primarily caused by Hepatitis A, B, C, D, E and G viruses. Hepatitis B virus infection is common amongst all other viruses, affecting millions of

people worldwide with potential life-threatening liver diseases. The disease is endemic throughout world, including the remote areas and islands with varying prevalence. It is parenterally transmitted with only humans as the reservoir of infection. Other common modes of transmission include, the sexual and perinatal routes. Intra venous drug users, people living in high endemic areas, men having sex with men and health care personnel are among the high-risk group for this infection. Approximately two billion people have been exposed to HBV, and more than 300 million are chronically infected with HBV. Clinical presentation in HBV infection starts after 2-6 months of incubation period with symptoms of anorexia, fever, hepatic tenderness and jaundice. HBV can cause wide spectrum of illnesses. In acute phase, it ranges from anicteric to icteric phase with fulminant hepatitis. whereas in chronic infection, it ranges form asymptomatic carrier, chronic hepatitis, cirrhosis to hepatocellular carcinoma (HCC). Approximately 45% of the world & 39 population lives in regions where HBV infection is endemic. However, around 5-70% cases are asymptomatic, 10% of them can turn into carriers and can become chronic cases and may have life threatening complications like cirrhosis and HCC. In India, among approximately 50 million carriers, the death rate is 4-5%. HBV related HCC is the fifth most important carcinoma in the world. The natural history of HCC from HBV infection depends upon a complex mixture of behavioral, environmental and host factors including age at infection, sex, geographical area, foodstuff including aflatoxins, ethnicity, alcoholism, smoking and viral factors. Therefore, establishing the trend in a given geographic area is paramount. Hepatitis B virus (HBV) belongs to the hepadnaviridae, a family of enveloped viruses with an incomplete double stranded DNA genome of 3.2 kb. Presently ten HBV serotypes (A-J) and several subtypes have been detected by a sequence divergence greater than 8% in the entire HBV genome or a sequence divergence greater than 4% in the S region of the genome. Genotype A is more prevalent in Northern Europe, and Africa, B and C genotypes in Asia, Genotype D in India, middle east and Mediterranean region, Genotype E in west Africa, Genotype F in South and central America, Genotype G in USA, Germany and France, Genotype H in Mexico and South America, Genotype I in Vietnam and Laos, Genotype J in Ryuku Islands of Japan. The viral factors includes; HBV viral load, genotype and mutations in the HBV genome. Various Western studies have proved the association between HBV serotypes, liver severity, viral markers and clinical manifestations along with treatment. As compared to the western countries, studies on HBV genotypes and its associated factors is in slower pace and is rather sparse in India. According to some studies, the genotype A is pandemic whereas, genotype D is most prevalent in India, and also associated with increased risk of Cirrhosis and HCC. Hence establishing the circulating genotypes in the community is rather crucial. However, at present, there is paucity of knowledge regarding circulating HBV genotypes in our region and their association with clinical severity of the disease. Hence, it is not only important to diagnose HBV infected patients but also, to establish the circulating HBV genotype, so that, prompt and specific therapeutic and preventive measures can be adopted in order to reduce associated complications. Therefore, this study aims to detect HBV-infected patients, identify the associated HBV genotypes by using molecular techniques like PCR and co-relate them with clinical manifestations.

Detection Of Bacterial Microbiome From Prostate Tissue Samples

Mehumuda Hussain1*
KLE Academy of Higher Education & Research, Belgavi

ABSTRACT

According to the previous research about 15%- 20% of all cancers are caused by pathogenesis of microbiota. Changes in the composition of the resident microbiota, also stated as microbial dysbiosis of microbial cells living within the body can influence prostate cancer development and/or progression. In this study we investigated differential compositions of commensal bacteria among patients with benign prostatic hyperplasia (BPH) and prostate cancer using microbiological and molecular techniques. We observed higher number of gram negative bacteria in all the patients along with 2 samples of prostate cancer containing mixed bacteria. Gel image showed most of the bacteria having 400-500bp. The study may thus offer to develop a framework for exploiting this microbial signature for early diagnosis and prognosis of PCa development.

Green Synthesis of Copper Nanoparticles coated Lactobacillus acidophilus by using Ocimum tenuiflorum and screening its antibacterial activity

Satheesh S 1 , Dr. Shazia Jamal
1 Department of Biotechnology, School of Life Sciences, B.S.A. Crescent Institute of Science and Technology, Chennai-600048

ABSTRACT

Ocimum tenuiflorum is a fragrant perennial plant in the Lamiaceae family that is also known as holy basil, Tulsi or Tulasi, and tamole, damole, or domole in Fiji. It is widely planted in Southeast Asia's tropics and is indigenous to the Indian subcontinent. In this work, an economical and ecologically friendly approach for creating stable copper nanoparticles (CuNPs) coated Lactobacillus acidophilus culture supernatant will be present. Several methods, including scanning electron microscopy, energy dispersive X-ray, X-ray diffraction, UV-visible spectroscopy, Fourier transform infrared spectroscopy, Zeta potential and Dynamic light scattering will be used to analyze the biosynthesized CuNPs coated Lactobacillus acidophilus. The antibacterial efficiency of the copper nanoparticle-coated Lactobacillus acidophilus will be evaluated in accordance with the recommendations of the Clinical and Laboratory Standards Institute (CLSI). The MIC was established using the 96-well plate microdilution technique, and copper nanoparticles coated Lactobacillus acidophilus will be created at varied concentrations. The baseline for the MBC was the minimal concentration necessary to eliminate 99.9% of the original bacterial population. The zone of inhibition in each concentration was measured by agar well diffusion. The future goal is to cure the infected persons affected by klebsiella pneumoniae using copper nanoparticles coated Lactobacillus acidophilus by using Ocimum tenuiflorum. Key Words: Lactobacillus acidophilus, Copper nano particles, MIC, MBC, Agar well diffusion, bio-film, time kill kinetic assay, antimicrobial activity, klebsiella pneumoniae.

Anti-bacterial activity of Aleo vera (*Aleo barbadensis)*

Maheshwari K.M, Manasa C, Manasa R, Shekar Naik R, Mahesh Shivananjappa*

Department of Food science and Nutrition, Yuvaraja's College (Autonomous)

University of Mysore, Mysuru, Karnataka, India

***Corresponding author: mayavishiva@gmail.com**

ABSTRACT

Aleo barbadensis (Ab)is commonly known as Aleo vera. It belongs to the family Asphodelaceae. It has medicinal property and been traditionally used for wound healing. AB has many pharmological activities such as anti-inflammatory, anti-cancer, anti-hyperglycaemic, ant-oxidant and other activity. The present study aimed to investigate the inhibitory effects of aloe vera extract against bacterial growth. The extract of aloe vera leaves was used with different solvents like viz... Ethanol, methanol, Ethyl alcohol extract. The antibacterial activity of the extract was evaluated using agar well diffusion method against Gram-positive and Gram-negative bacteria. The aloe vera extract exhibited inhibitory activity against bacterial strains tested. The zone of inhibition observed ranged from 00mm per 25mg/ml to 33.2 mm per 0.50 mg/ml, and the maximum inhibition being observed against *E. bovis*(33.2mm). Minimum inhibition showed on *P. aeruginosa, T. mentagrophytes, M. canins, C. albicans*(00mm). The minimum inhibitory concentration (MIC) of the extract was found to be in the range of 0.10mg/ml to 100mg/ml. Above result confirms the inhibitory effect of Aleo vera extracts and Aleo vera against several microbes.

Keywords: Gram positive, leaves extract, Antioxidant, Zone of inhibition

Anti-microbial activity of Rosemary [*Rosmarinus officinalis*]

Vedashree PK, Payal R, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysuru, Karnataka, India
Corresponding author: mayavishiva@gmail.com

ABSTRACT

*Rosmarinus officinali*s (RO) is an herb belongs to the family Lamiaceae. It is commonly known as Rosemary or *Salvia Rosmarinus*. Essential oil of rosemary can inhibit the growth of bacteria and yeasts. Therefore, it can be used as a potential anti-microbial agent. Many researches confirmed that chemical composition of rosemary essential oil such as verbenone, camphor, 1,8-cineole, α-pinene, borneol showed antimicrobial activity against microorganisms like *E. coli*, *B. substilis*, *P. aeruginosa*, *S. aureus*. *Staphylococcus aureus* showed maximum zone of inhibition that is 25mm for minimum inhibitory concentration (23.25 mg/mL) of rosemary essential oil and minimum inhibition zone in *E. coli*. Ethanolic extract of RO decrease the food born infection and increase the zone of inhibition in microorganisms. It is further used as traditional medicine for its choleretic, hepatoprotective, and antitumorigenic activities. Above results confirms the inhibitory effects of RO extract and essential oil of rosemary against several microbes.

Key words: *Salvia Rosmarinus*, Anti-microbial, *Escherichia coli*, *B. subtilis*, *P. aeruginosa*, *S. aureus*, minimum inhibitory concentration.

Google Link for the First Day Conference: meet.google.com/mqd-nuzf-opx

DAY 2: 08th April2023

Time	Sequence of Events
10:30am to 10:45am	Inauguration Welcome Speech About the Conference Talk by Convener
10:45am to 11:15am	Plenary lecture-2 **Dr. Gaurav Saxena** Faculty of Applied Sciences & Biotechnology Shoolini University, Solan, HP.
11:15am to 11:45am	Plenary lecture-3 **Mrs. Manasa R** Lecturer Department of Food and Nutrition Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka
11:30am to 12:30pm	Tea break
12:30pm to 2:30pm	**Oral Presentation** **31. Srikari.K.N** Development and quality evaluation of Banana Dosa from Foxtail millet (Setaria italica) **32. Sushma Im** Development and quality evaluation of Bhatura from Barnyard millet (Echinochloa esculenta) **33. Meghana A Nayak** Development and quality evaluation of Appam from Sorghum (Sorghum bicolor) **34. Swasthika P.Y** Development and quality evaluation of Selroti from Sorghum (*Sorghum bicolor*) **35. Gagana.N.K** Development and quality evaluation of Dosa from little millet (Panicum sumatrense) **36. Manasa.C** Development and quality evaluation of Selroti from Finger millet (Eleusine coracana)flour **37. Deepika.M** Development and quality evaluation of Bhatura from Sorghum (sorghum bicolor) **38. Kusum.N** Development and quality evaluation of Dhokla from Sorghum (sorghum bicolor) **39. Sofiya** Antimicrobial activity of Mulethi (Glycyrrhiza glabra Linn) **40. Bhumika M**

	Antibacterial activity of Lemon balm (Melissa officinalis) **41. Savitha S Kundapura** Antimicrobial activity of Madhu tulsi (Stevia rebaudiana) **42. Harshitha R** Antimicrobial activity of Neem (Azadirachta indica) **43. Sangeetha B.P** Antifungal activity of Cinnamon (Cinnamomum verum) **44. Tejaswini A.S** Antimicrobial activity of Myrobalan (Terminilia chebula) **45. Meghana .B.C** Antimicrobial activity of Green chiretta (Andrographis paniculata) **Poster Presentation** **4. Apoorva.D.S** Antimicrobial activity of Malabar nut(*Adhatoda vasica*) **5. Sushma S** Antimicrobial activity of Guggul (*Commiphora weghtii*) **6. Vinutha.C** Antimicrobial activity of Fenugreek (*Trigoneooamfoenum-graecum*) **7. Varnitha T.M** Antimicrobial activity of Garlic (*Allium sativum*) **8. Darshini.K.P** Antimicrobial activity of Peppermint (Mentha piperita) **9. B.Bhavana** Antimicrobial activity of Pot marigold (Calendula officinalis) **10. Varsha.S** Antbacterial activity of Sarpagandha (Rauwolfia serpentina)
4.30 PM	Valedictory Function and Awards Distribution

Bioremediation of Industrial Effluents and Biomass Valorization for Bioproducts Development

Dr. Gaurav Saxena

School of Biotechnology, Shoolini University of Biotechnology and Management Sciences, Kasauli Hills, Solan, Himachal Pradesh, India 173 229

ABSTRACT

The contamination of soil and water by the effluent from leather tanneries can also have a significant impact on the natural ecosystem. Efforts to reduce the impact of leather tanneries on the environment must therefore be prioritized. Ultimately, proper treatment and detoxification of TE are crucial for the sustainability of the tanning industry and the protection of the environment and public health. This study highlights the importance of microalgae as a sustainable and eco-friendly solution for TE treatment. In the present study, an effective degradation of real TE was attained by a newly isolated microalgal strain NVNT1 within 12 days with 74.23, 82.12, 68.68, 45.18, 75.78, 65.22, 68.33, and 82.65% reductions in pollution parameters such as COD, BOD, TDS, phosphate, sulphate, nitrate, Cr, and phenol, respectively. After a period of 12 days of treatment, the degradation products were identified using FT-IR, HP-LC, and GC-MS-MS, and the mineralization of the pollutants was also accompanied by a decrease in the chemical oxygen demand (COD) and total organic carbon (TOC) of the treated TE. The biodegradation of the pollutants was mainly attributed to the metabolic activities of the microalgal strain NVNT1, which was able to utilize the pollutants as carbon and energy sources for growth and reproduction. The results indicate the potential of this microalgal strain for TE treatment and detoxification. Additionally, a model organism, Phaseolus aureus L was used to ensure that the detoxification process is safe for other living organisms as well. Results showed that the toxicity of microalgae-treated TE was greatly reduced, allowing 80% of seeds to germinate, and this proved that leather TE had been detoxified. This experiment suggests that microalgae treatment could be a promising method for reducing environmental toxicity in leather production and thus, could lead to the development of more sustainable and eco-friendly methods for leather production. Further, microalgae biomass was used to prepare the biodiesel and results showed the production of biodiesel via valorization of the developed microalgal biomass after TE treatment. Overall, the newly isolated microalgae strain NVNT1 demonstrated a remarkable potential to efficiently treat/detoxify leather TE with biodiesel potential for environmental safety.

Keywords: Tannery effluent; Microalgae; Bioremediation; Valorization, Biodiesel; Environmental safety

Corresponding Author is at: School of Biotechnology, Shoolini University of Biotechnology and Management Sciences, Kasauli Hills, Solan, Himachal Pradesh, India 173 229; Email: gauravsaxena@shooliniuniversity.com; gaurav10saxena@gmail.com

International Year of Millets – 2023: Curtain Raiser

Manasa R, Shekhara Naik R, Mahesh Shivananjappa

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka

ABSTRACT

Millets are a group of diverse whole cereal grains that are well-known for their high nutritional content. Traditionally, Millets had been an integral part of the diet in Indian homes. There are many different types of Millets grown and consumed in Indian. They have been making resurgence in recent years as more and more consumers opt for a healthier lifestyle. In order to encourage production and consumption of millets, Government of India notified millets as Nutri-Cereals in April, 2018, which includes Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi/Mandua) & Minor Millets namely; Foxtail Millet (Kangani/Kakun), Proso Millet (Cheena), Kodo Millet (Kodo), Barnyard Millet (Sawa/Sanwa/ Jhangora), Little Millet (Kutki) and two Pseudo - millets viz Buckwheat (Kuttu) and Amaranthus (Chaulai). To create domestic and global demand and to provide nutritional food to the people, Government of India had proposed to the United Nations for declaring 2023 as International Year of Millets (IYoM-2023). The proposal of India was supported by 72 countries and United Nation's General Assembly (UNGA) declared 2023 as International Year of Millets on 5th March, 2021. FAO is the lead agency for celebrating the Year in collaboration with other relevant stakeholders. Millets can grow on arid lands with minimal inputs and are resilient to changes in climate. They are therefore an ideal solution for countries to increase self-sufficiency and reduce reliance on imported cereal grains. Millets are a collective group of small seeded annual grasses that are grown as grain crops, primarily on marginal land in dry areas of temperate, sub-tropical and tropical regions. Millets are nutritionally comparable to major cereals and serve as good source of protein, micronutrients and phytochemicals. Millets have potential health benefits and epidemiological studies have showed that consumption of millets reduces risk of heart disease, protects from diabetes, improves digestive system, lowers the risk of cancer, detoxifies the body, increases immunity in respiratory health, increases energy levels and improves muscular and neural systems and are protective against several degenerative diseases such as metabolic syndrome and Parkinson's disease. Finger millet based diets have shown lower glycemic response due to high fiber content and also alpha amylase inhibition properties which are known to reduce starch digestibility and absorption. Millet polyphenols of millets could be used as a natural source of antimicrobials and antioxidants, especially for minimizing the risk of diseases arising from oxidative deterioration and also cytotoxic effects.

Development of Banana Dose from Foxtail millet (*Setaria italic)*

Srikari K N, Manasa R, Shekhara Naik R Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mail id: mayavishiva@gmail.com

ABSTRACT

Dose is a traditional south Indian breakfast dish, made out of rice and black gram dal. Banana dose is a type of dose made in south Karnataka and Kerala region using a base as rice and banana. In this study rice is partially replaced by foxtail millet. Foxtail millet (Setaria italica) possess health-promoting properties owing to its unique protein composition containing a high content of essential amino acids. The mature foxtail seeds mainly consist of proline-rich, alcohol-soluble proteins (prolamin) called setarins, comprising about 60% of the total protein, with less content of disulfide cross-linked proteins than with other cereal and millets. Banana is rich in fiber, potassium and magnesium helps in digestion, boost bone health and build lean muscle. In this study banana dose were prepared by partially replacing rice with foxtail millet. Six formulations (F1, F2, F3, F4, F5, and F6) containing different proportions of Foxtail millet (0%, 20%, 40%, 60%, 80%, 100%) along with rice and banana were used to prepare dose. These formulations were analyzed sensory attributes (n=30). Further, standardization of fermentation time and analysis of proximate composition was also carried out. Fermentation of the developed product was optimized and detected by performing variations in fermentation time (6-24 h), followed by their sensory evaluation. Banana dose prepared with 60% foxtail millet and fermented for 12 h had the highest scores in terms of sensory scores. Moreover, banana dose prepared from foxtail millet had more protein, fiber, phosphorus and less fat and carbohydrate content compared to standard banana dose.

Keywords: Foxtail millet, fermentation, protein, acceptability.

Effect of Fermentation on sensory attributes of Proso millet Dhokla (*Pennisetum glaucum)*

Anitha Tendulkar CM, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mail id : mayavishiva@gmail.com

ABSTRACT

Fermentation technique is known to significantly enhance nutrients in foods. Dhokla is a fermented food of India and is popular throughout the country. Proso millet is an energy packed grain and it is rich in essential nutrients like protein, vitamins, calcium and dietary fibre, being rich in dietary fibre with low glycemic index reduces the risk of type-2 diabetes, it is rich in lecithin

which helps in functioning of nervous system, it lowers bad cholesterol. Lactic acid bacteria is the principal microorganism present in dhokla. This study was conducted to develop and evaluate fermented Dhokla of six different compositions P1, P2, P3, P4, P5 and P6 containing Bengal gram dhal, salt, curd with different proportions of Proso millet (0%, 20%, 40%, 60%, 80%, 100%) were developed and these developed products were analysed for sensory attributes (n=30). Further, standardization of fermentation time and analysis of proximate composition was also carried out. Fermentation of the developed product was optimised and detected by performing variations in fermentation time (6 - 24 h), followed by their sensory evaluation. Dhokla prepared with 60% Proso millet fermented for 18 h had the highest scores in terms of sensory scores. Dhokla prepared from Proso millet had more protein, fibre and iron. They are gluten free and have low glycaemic index compared to traditional Dhokla, since they contain less carbohydrates and more fibre.

Keywords: Fermentation, lactic acid bacteria, glycemic index, dietary fibre, lecithin and

Development of punugulu from Foxtail (*Seteria italica)* & Standardization of its fermentation time

Divyashree S, Manasa R, Mahesh Shivananjappa, Shekhara Naik R

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

*Corresponding author: mail id: mayavishiva@gmail.com

ABSTRACT

Punugulu is one of the most delicious and authentic deep fried dish of South Indian cuisine made with black gram dal and rice batter. Foxtail millet (Seteria italic) one of the earliest crop in the world & one of the top five millet in the India. It has significant amount of protein, fiber, minerals, and phytochemicals. However fermentation has proven to reduce the anti-nutritional factors, thus improving the nutritional availability and functional properties of foxtail. This research includes the development of Punugulu by replacing rice with Foxtail. In this study six formulations (F1, F2, F3, F4, F5, and F6) containing different composition of Foxtail millet flour (0%, 20%, 40%, 60%, 80% and 100%) was developed. These formulations was analyzed for sensory attributes [n=20] Further standardization of fermentation time and analysis of proximate composition was also carried out. Fermentation of the developed product was optimized and detected by variation in fermentation time (5-20h), followed by their sensory evaluation. Punugulu prepared with 40% foxtail and fermented for 12 h had the highest scores in terms of sensory scores. Moreover, punugulu prepared from foxtail had more protein, fiber, phosphorus. They are gluten free and have low glycemic index compared to traditional punugulu from rice, since they have less carbohydrates and more fiber.

Key words: Foxtail millet, Fermentation, Anti-nutritional factors, gluten free, low glycemic -index Punugulu.

Effect Of Fermentation Time On Sensory Attributes Of Little Millet (*Panicum Sumatrense) Idli*

Surabhi M , Manasa R , Shekhara Naik R , Mahesh Shivananjappa*

Department Of Food Science and Nutrition, Yuvaraj's College (Autonomous), University Of Mysore, Mysuru, Karnataka, India

*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Idli is a fermented food of Indian which is prepared by steaming a fermented black gram dal and rice batter. It makes an important contribution in the diet as a source of calories, proteins, vitamins especially B-complex vitamins. Lactic acid bacteria are responsible for the fermentation which are present in the idli batter. Cereals and legumes are the main ingredients in the idli batter but it can be replaced with millets. Millets are rich in minerals, tannins, flavonoids, and antioxidants. Millets are also rich in dietary filers, magnesium and niacin and it is low in glycemic index. Little millet (*Panicum sumatrense*) is one of the largest cultivation of central India. Little millet is rich in magnesium which helps improve heart health. It is also rich in niacin which helps lower cholesterol . Little millet contains phosphorous which is great for weight loss. It contains probiotics which improves the gut health. An investigation was undertaken to develop value added little millet idlis. This study was conducted to develop and evaluate idli of six different composition L1, L2, L3, L4, L5 and L6. Standardization trials indicated that incorporation of little millet at [0%, 20%, 40%, 60%, 80%, 100%] were incorporated to the standard recipe. Little millet rice idlis is nutritionally superior than the control idlis as it is rich in fibre and magnesium, niacin and antioxidants. These incorporated formulations were analysed for sensory attributes [n=15]. The sensory score is highest for L3. Fermentation of the developed product was optimised and detected by performing variations in fermentation time [6Hrs, 12Hrs, 18Hrs, 24Hrs], followed by their sensory evaluation. The sensory score was highest for the product which was fermented for 12Hrs. Proximate nutritional analysis in selected variation had increased protein, fibre, phosphorous levels when compared to standard. The present study documents how the microbial growth influence the batter characteristics and quality of idli in terms of nutritional and sensory attributes.

Keywords : little millet, fermented, lactic acid bacteria, cereals and legumes.

Effect of Fermentation on sensory attributes of Kodo Millet (*Paspalumscrobiculatum*) Bhatura

Rashmi S, Manasa R, Shekhara Naik R, Mahesh Shivnanjappa*

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Fermentation is a natural process which reduces phytic acids and tannins, therefore enhancing the protein availability and digestion in millets. It improves the palatability and acceptability by developing improved flavours, textures and nutritive content. Bhatura is a fluffy deep-fried leavened sour dough bread originating from the Indian subcontinent. Kodo millet is very beneficial as they are rich in antioxidants, dietary fibre, phenolic compounds, B Vitamins like niacin, folic acid, as well as the minerals such as iron, potassium and zinc. The potential health benefits include weight loss, improve gut health and bowel movement and helps in irregular menstrual cycles and reduces its cramps. This study was conducted to develop and evaluate the fermented Bhatura by replacing the Maida with Kodo millet of six different compositions K1, K2, K3, K4, K5 and K6 along with the semolina, baking soda, baking powder, salt, sugar and curd with different proportions of Kodo millet (0%, 20%, 40%, 60%, 80% and 100%). The developed products were analysed for its sensory attributes (n=20). The highest sensory score obtained for K3 with overall acceptability of 8.00±0.63. Fermentation of the developed product was optimised and detected by performing variations in fermentation time [1 Hrs, 2 Hrs, 3 Hrs & 4 Hrs], followed by their sensory evaluation. The highest score obtained for the Kodo millet Bhatura which was fermented for 3 Hrs and its nutrition composition was calculated according to standard AOAC method. The present study documents how the microbial growth influence the batter characteristics and quality of Bhatura in terms of nutritional and sensory attributes. The proximate analysis of nutrients in selected variation had increased protein, fat, dietary fibre, phosphorous and iron levels when compared to standard.

Key word: Fermentation, Bhatura, Microbial growth, Antioxidant, Vitamin B

Development and quality evaluation of Dosa from Pearl millet (*Pennisetum glaucum*)

Payal R, Manasa R , Mahesh Shivananjappa , Sheskhara Naik R

Department of Food Science and Nutrition, Yuvaraja's College(Autonomous), University of Mysuru, Karnataka, India

Corresponding author: mayavishiva@gmail.com

ABSTRACT

Fermentation is the process of conversion of carbohydrates to alcohol and carbondioxide using yeast, bacteria or combination of both under anaerobic condition. Dosa is the traditional fermented food which is prepared using cereal and pulse under anaerobic condition. Pennisetum glaucum is one of the top five millet in India. It is known as Pearl millet. In India it is commonly called as Bajra. The study was conducted to check how partial replacement of rice with pearl millet influence on the fermentation quality of dosa. Hence six different compositions P1, P2, P3, P4, P5 and P6 containing black gram dhal, fenugreek seeds and salt with different proportions of Pearl millet (0%, 20%, 40%, 60%, 80% and 100%) were formulated and thus analysed for the sensory attributes (n=20). Among all the formulations P3 had highest sensory attributes. Then fermentation time was varied in P3 formulation for 6 hours, 12 hours, 17 hours and 24 hours to check the fermentation quality. Dosa prepared with 6 hours fermentation time had highest acceptability in terms sensory attributes and increased nutritive value. Proximate nutritional composition of the highly accepted variation was analyzed by standard procedure. Dosa prepared from pearl millet was rich in protein, fibre, calcium and phosphorus. Pearl millet being rich in dietary fibre with low glycaemic index reduces the risk of type-2 diabetes. Fermentation improves the digestibility and protect the gut health. Fermentation of millet is beneficial as it increases the availability of all essential ammino acids and antioxidants.

Keywords: Fermentation, Pennisetum glaucum, low glycemic index, antioxidants.

Development of Banana Dose from Foxtail millet (*Setaria italic)*

Srikari K N, Manasa R, Shekhara Naik R Mahesh Shivananjappa*

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

*Corresponding author: mail id: mayavishiva@gmail.com

ABSTRACT

Dose is a traditional south Indian breakfast dish, made out of rice and black gram dal. Banana dose is a type of dose made in south Karnataka and Kerala region using a base as rice and banana. In this study rice is partially replaced by foxtail millet. Foxtail millet *(Setaria italica*) possess health-promoting properties owing to its unique protein composition containing a high content of essential amino acids. The mature foxtail seeds mainly consist of proline-rich, alcohol-soluble proteins (prolamin) called setarins, comprising about 60% of the total protein, with less content of disulfide cross-linked proteins than with other cereal and millets. Banana is rich in fiber, potassium and magnesium helps in digestion, boost bone health and build lean muscle. In this study banana dose were prepared by partially replacing rice with foxtail millet. Six formulations (F1, F2, F3, F4, F5, and F6) containing different proportions of Foxtail millet (0%, 20%, 40%, 60%, 80%, 100%) along with rice and banana were used to prepare dose. These formulations were analyzed sensory attributes (n=30). Further, standardization of fermentation time and analysis of

proximate composition was also carried out. Fermentation of the developed product was optimized and detected by performing variations in fermentation time (6-24 h), followed by their sensory evaluation. Banana dose prepared with 60% foxtail millet and fermented for 12 h had the highest scores in terms of sensory scores. Moreover, banana dose prepared from foxtail millet had more protein, fiber, phosphorus and less fat and carbohydrate content compared to standard banana dose.

Keywords: Foxtail millet, fermentation, protein, acceptability.

Standardization of fermentation time and its effect on sensorial attributes of Bhatura from Barnyard Millet (*Echinochloa frumentacea*)

Sushma I M, Manasa R, Shekhara Naik, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Fermentation has been a major way of preserving foods. Microbial growth causes chemical and textural changes to form a product that can be stored for extended periods. Bhatura is a North Indian leavened fried bread made with a leavened dough of maida flour, curd, semolina, salt, sugar and a leavening agent (baking soda, baking powder). It is one of the fermented products where curd contains several microorganisms including lactobacillus bacteria which undergoes anaerobic respiration and, in this process, it acts on the sugar of the flour and releases carbon dioxide, this gas makes the dough rise and when baked or fried the gas escapes leaving the bhatura soft and spongy. Barnyard millet has become one of the most important minor millet crops in Asia, showing a firm upsurge in world production. It is a good source of protein, carbohydrate, fiber, and most notably, contains more micronutrients (iron and zinc) than other major cereals. It is believed that the consumption of barnyard millet can possess various health benefits against diabetes (as the flour is gluten-free), cardiovascular diseases, obesity, skin problems, cancer and celiac disease. In this study Bhatura were prepared in six different variations like B1, B2, B3, B4, B5 and B6 with partially replacing maida flour with barnyard millet. The different incorporation of barnyard millet proportion was (0%, 20%, 40%, 60%, 80%, 100%). These different formulation of bhatura dough were fermented for different timings like 1, 2, 3, 4 h and standardized fermentation time was analysed and were analysed for their sensorial attributes by hedonic scale method (n=15). The sensory scores were highest for Bhatura which had 40% barnyard (B3) and was fermented for 3 h. The proximate nutritional values in this variation were high in iron, protein, fat and fiber compared to the standard bathura. This study helps in understanding the relation between fermentation time and sensorial properties of the Bhatura which also is gluten free and have low glycaemic index.

Keywords: Fermentation, Leavening, Lactobacillus, celiac disease, Barnyard millet.

Development of Appam from Sorghum (*Sorghum bicolor*)

Meghana A Nayak, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous),
University of Mysore, Mysuru, Karnataka, India
*corresponding author – mayavishiva@gmail.com

ABSTRACT

Appam is a traditional fermented Indian food prepared with rice flour, white sugar and coconut milk. Sorghum is one of the top five millets in India. Its use as gluten free cereal is gaining importance in other developing countries. One of the major deterrents for its use as food is the lower availability of protein, starch, and minerals due to the presence of anti-nutritional factors like tannins and phytic acid. However, processing like fermentation has proven to reduce the anti-nutritional factors, thus improving the nutritional availability and functional properties of sorghum. In this study Appam were prepared by partially replacing rice with sorghum. Six formulations (S1, S2, S3, S4, S5 and S6) containing different composition of sorghum flour (0%, 20%, 40%, 60%, 80% and 100%) along with white sugar and coconut milk were used to prepare Appam. These formulations were analysed for sensory attributes [n=20]. Further, standardization of fermentation time and analysis of proximate composition was also carried out. Fermentation of the developed product was optimised and detected by performing variations in fermentation time (5 - 20 h), followed by their sensory evaluation. Appam prepared with 40% sorghum and fermented for 5 h had the highest scores in terms of sensory scores. Moreover, Appam prepared from sorghum had more protein, fiber, and phosphorus. They are gluten free and have low glycaemic index compared to traditional Appam from rice, since they have less carbohydrates and more fibre.

Key Words: Fermentation, Anti-nutritional factors, Gluten free, Low glycemic-index

Effect of fermentation time on sensory attributes of Sorghum (*Sorghum bicolor*) Selroti

Swasthika P Y, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Fermentation is one of the oldest biotechnological processes, that preserves food, improves its nutritional value and enhances its sensory attributes. Selroti is a rice-based fermented food indigenous to Nepal, which is spongy and ring-shaped. It has a good amount of digestible proteins. *Lactobacilli*, *Pediococcus*, *Enterococci* and *Leuconostoc* are the principal microorganisms present in selroti. Sorghum [*Sorghum bicolor*] popularly called as jowar, is the "king of millets". Sorghum

belongs to the grass family (Poaceae). It is a gluten-free-Nutri-cereal and contains a significant level of iron, starch, protein, antioxidant and phenolic compound (Phenolic acids, 3-deaxyanthoyanidins and condensed tannins). In this study Selroti were prepared by partially replacing rice with sorghum. Six formulatons (S1, S2, S3, S4, S5 and S6) containing jaggery, refined wheat flour, spices with different compositions of sorghum and rice (0%, 20%, 40%, 60%, 80%, 100%) were used to prepare selroti. These formulations were analyzed for sensory attributes (n=30). Further, standardization of fermentation time and analysis of proximate composition was also carried out. Fermentation of the developed product was optimized and detected by performing variations in fermentation time (3-12 h), followed by their sensory evaluation. Selroti prepared with 60% sorghum and fermented for 6 h had the highest scores in terms of sensory scores. Selroti prepared from sorghum had more protein, iron, fiber and phosphorous.

Key words: *Pediococcus, Leuconostoc*, antioxidant, gluten free, jowar

Development and quality evaluation of dosa from little millet (*Panicum sumatrense*)

Gagana NK, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

*Corresponding author: mail id : mayavishiva@gmail.com

ABSTRACT

Fermentation is a natural process through which microorganisms like yeast and bacteria convert carbs — such as starch and sugar — into alcohol or acids. Fermented foods, like dosa, contain beneficial bacteria called probiotics. These probiotics can help improve gut health by promoting the growth of beneficial gut bacteria. Dosas are popular in South Asia as well as around the world. Dosas are served hot, often with chutney and sambar. Little millet is rich in Magnesium which helps improve heart health. It is also rich in Niacin which helps lower cholesterol. Little millet contains phosphorus which is great for weight loss, tissue repair and energy production. This study was conducted to develop and evaluate fermented dosa of six different compositions L1, L2, L3, L4, L5 and L6 containing rice, black gram dhal, fenugreek with different proportions of little millet (0%, 20%, 40%, 60%, 80%, 100%) we were developed and evaluated for acceptability using subjective and objective method by taking rice dosa as a control. These formulations were analysed for sensory attributes [n=20] and the sensory score is highest for L4 and its nutrient composition was recorded. Then fermentation time was varied in L4 formulation for 6 hours, 12 hours, 18 hours, 24 hours for evaluation of fermentation quality. The dosa prepared with 6 hours fermentation time was more acceptable. Proximate nutritional composition of the best accepted varition were analysed by standard procedure.Dosa prepared from little millet had more protein,

fibre, calcium and phosphorus. They are gluten free and have low glycaemic index compared to traditional dosa, since they contain less carbohydrates and more fibre.

Key words: Fermentation, probiotis , glycemic index, dietary fibre.

Standardization of Fermentation time and Development of Selroti from Finger millet (*Eleusine coracana L.*)

Manasa C, Manasa R, Mahesh Shivananjappa, Shekhara Naik R
Department Of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Selroti is a fermented rice-flour confectionary indigenous to Nepal, which is doughnut-like deep fried, puffed, spongy, and ring-shaped. *Lactobacilli, Pediococcus, Enterococci* and *Leuconostoc* are the principal microorganisms present in Selroti. Finger millet (*Eleusine coracana L.*) provides highest level of calcium, antioxidants and phytochemicals, which makes it easy and slowly digestible. In this study, Selroti were prepared by partial replacement of rice with Finger millet. Six different formulations (F1, F2, F3, F4, F5 and F6) containing different composition of Finger millet flour (0%, 20%, 40%, 60%, 80% and 100%) along with Jaggery, Maida, coconut powder and milk, along with spices were used to prepare Selroti. These formulations were analyzed for sensory attributes (n=30). Further, Standardization of fermentation time and analysis of proximate composition was also carried out. Fermentation of the developed product was optimized and detected by performing variation in fermentation time (3-12), followed by their sensory evaluation. Selroti prepared with 40% finger millet and fermented for 6 Hrs had the highest scores in terms of sensory scores. Selroti prepared from finger millet had more calcium, protein, iron, and fiber.

Keywords: Fermentation, antioxidant, *Leuconostoc*, phytochemical.

Optimization of fermentation time and its effect on the organoleptic properties of bhatura from sorghum (*Sorghum bicolor*)

Deepika M, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author mayavishiva@gmail.com

ABSTRACT

Fermentation is the traditional food processing technique which microbial activity increases the bioacsessablility of nutrients and enhances the texture of food products . Bhatura is the north Indian fermented product resembles puri. It is a deep fried, leavened sourdough bread which has a unique flavour profile due to lactic acid fermentation mainly by lactic acid bacteria(LAB). 'The king of millets'- sorghum (jowar) is the most commonly used millet & it is a rich source of dietary fibre, protein , iron and other micronutrients including phenolic compounds and antioxidants. It is also gluten-free like other millets which can exhibit protective effect against, CVD, obesity, diabetes , hypercholesterolemia & constipation. The study was carried out to develop a value based product with low glycaemic index. Bhatura was prepared in six formulations SB1, SB2, SB3, SB4, SB5, & SB6 from refined wheat flour as base ingredient and it was replaced with sorghum (sorghum bicolor) flour in different proportions (standard, 20% 40%, 60%, 80% & 100% respectively). The subjective evaluation of bhatura by semi-trained panelists (n=30) resulted with high acceptance for SB3 (40%) variation. The product SB3 (40%) was subjected to optimize the lactic acid fermentation time and it was 1, 2, 3 & 4 hours respectively. On its organoleptic evaluation, fermentation for three hours provided appropriate sensorial features to the product. Hence, it acquired high acceptance than those were prepared by fermenting for variable duration. The proximate analysis of nutrients in selected variation had increased Protein, fiber, Iron & Phosphorus levels when compared to standard. Moreover it also reduced the carbohydrate content of bhatura making it low glycaemic in nature.

Key words : jowar, low-gluten, gramaeceae, *lactobascillus* , hetero-fermentation

Standardization of fermentation time of Dhokla and evaluation of its sensory parameters from Sorghum millet (*sorghum bicolor)*

Kusum N , Manasa R, Shekhara Naik R, Mahesh Shivananjappa*

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

*Corresponding author mayavishiva@gmail.com

ABSTRACT

Fermentation technique is traditionally practiced for the preparation of food with the help of the microorganism and their enzymes. Fermentation of grains lead to general improvement in shelf life, texture, taste, aroma, nutritional value, digestibility and it also reduces the anti-nutritional factors and enhances the bioavailability of nutrients. Sorghum millet is one of the main staple food and it belongs to grass family (Gramineae), it is a rich source of fibre, phenolic compounds, flavonoids, tannins, carotenoids, vitamin E, policosanols, and phytosterols. Dhokla is a Guajarati cuisine made from fermented rice and lentil batter and then it is cooked and tempered. This study

was conducted to develop and evaluate the fermented Dhokla of six different variations BGD1 (control) SMD2, SMD3, SMD4, SMD5 and SMD6 containing sorghum millet, Bengal gram dhal, curd, salt and by varying the proportion of sorghum millet and Bengal gram dhal (0%, 20%, 40%, 60%, 80%, 100%) Bengal gram dhal dhokla taken as control. These developed products were analysed for sensory attributes (n=30). The sensory score was highest for SMD3(40%), and was overall acceptable. Further, fermentation time of selected variation was varied from 6, 12, 18, 24 hours in which 12 hours fermented dhokla was highly acceptable and then they were subjected to proximate analysis. As a result protein, fat, fibre and iron were increased in SMD3 when compared to the control. The lactic acid bacteria are responsible for the development of the characteristics dhokla flavour, while yeast produces folic acid, raise the batter volume and gives sponginess to the product.

Key words: *sorghum bicolour*, jowar, lactic acid bacteria, hetero-fermentative organisms.

Anti-microbial activity of Mulethi (*Glycyrrhiza glabra* Linn)

Sofiya, Swasthika P Y, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*

Department of Food science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

*corresponding author: mayavishiva@gmail.com

ABSTRACT

Glycyrrhiza glabra Linn (Gg) is a medicinal herb. In India, it is also known as Mulethi. It belongs to the family Fabaceae (Leguminosae). Gg has many pharmacological activities such as anti-microbial, anti-inflammatory, anti-ulcer, anti-tumor and other activities. Antimicrobial activity refers to the ability of a substance or agent to inhibit the growth or kill microorganisms, such as bacteria, viruses, fungi, and protozoa. Several studies have been reported that dried root, leaves and rhizome extract of Gg shows significant anti-microbial activity by increasing the zone of inhibition in microbial strain. Chalcones decreases the expression of bacterial genes, inhibities its growth and reduces the production of bacterial toxin. Methanol extract of Gg showed maximum zone of inhibition in *E. coli* bacteria (33mm) and hexane extract of Gg showed minimum zone of inhibition in *R. solani* fungi (13mm). The present review article discusses the anti-microbial activities of Gg that have been reported in scientific references.

Keywords: chalcone, inhibition, *E. coli*, *R. solani*

Antibacterial activity of Lemon balm (*Melissa officinalis*)

Bhumika M, Anitha Tendulkar C M, Manasa R, ShekharaNaik R, Mahesh Shivananjappa*

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore,Mysuru, Karnataka, India.

*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Melissa officinalis (MO) commonly known as lemon balm belongs to the family Lamiaceae. It has been traditionally used for different medicinal purposes including wound healing and Antibacterial activity. The Phytochemical compound citral present in MO plays an important role in antibacterial activity. The Aqueous extract of MO showed maximum microbial inhibition concentrations against *E. coli, S. aurues, Vibrio parahaemoliticus* and also showed maximum zone of inhibition against *S. aureus, E. coli* and minimum zone of inhibition against *Vibrio parahaemoliticus*. The Ethanolic extract of MO showed increased microbial inhibition concentration against *E. coli, S. aureus, Bacillus cereus* and also showed maximum microbial inhibition concentration against *E. coli, S. aureus, Bacillus cereus* and then the maximum zone of inhibition was observed against *E. coli, S. aureus* and minimum concentration was observed against *Bacillus cereus*. Above results confirms the inhibitory zone of Melissa officinalis against several microbes.

Keywords: Medicinal herb, *E. coli*, Phytochemistry, citral, bacteria.

Anti-microbial activity of Madhu tulasi (*Stevia rebaudiana)*

Savitha S Kundapura, Srikari K N, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

***Corresponding author: mail id: mayavishiva@gmail.com**

ABSTRACT

Stevia rebaudiana (SR) is a perennial shrub, belongs to Asteraceae family, popularly known as madhu tulasi. It is native to Paraguay and it is known for its sweetness and calorie free property. Madhu tulasi has pharmacological and therapeutic properties which include anti-microbial, anti-fungal, anti-oxidant, anti-carcinogenic, anti-septic, anti-diabetic, anti-inflammatory, diuretic and cardio-protective properties. The antimicrobial property is examined by extracting SR leaves in different components such as aqueous, methanol, ethanol, ethyl acetate, acetone, petroleum, chloroform, cyclohexane and hexane then testing it against few selected microorganisms like *S. mutans, B. subtilis, S. aureus, M. luteus, S. marcenscens, P. aeruginosa, B. megaterium, E. coli, P. vulgaris, Yeast, A. niger and R. oligoporrus*. The efficiency of these leaf

extracts was compared to standard antibiotics like tetracycline and streptomycin. Hexane extract showed highest zone of inhibition against *E. coli*. Whereas Aqueous extract of showed lowest zone of inhibition for *E. coli* growth. Hexane and ethyl acetate had greater inhibition effect compared to aqueous extracts. SR extracts had both anti-bacterial and anti-fungal effects. From this observation it is investigated that different extracts of SR leaves had anti-microbial activity on several microorganisms.

Key words: madhu tulasi, zone of inhibition, leaf extracts, microorganisms

Antimicrobial activity of Azadirachta indica (Neem)

Harshitha R, Manasa R, Shekhara Naik R, Mahesh Shivananjappa .
Department of Food science and nutrition, Yuvaraja's college (Autonomous),
University of Mysore, Mysuru, Karnataka, India.
Corresponding author* : mayashiva@gmail.com

ABSTRACT

Azadirachta indica is one of the most important medicinal plant and it is belongs to Meliaceae family. It is commonly known as neem, bevu and margosa tree. It is known for its antimicrobial, antibacterial and antifungal effects, this property plays a huge role in boosting immunity. The leaves have an antiseptic property; the major phytochemicals Nimbi, Azadirachtin, gallic acid, phenols and other phytochemical components is different part of plant. The antimicrobial activity of A. indica leaf extract was carried out on S. aureus, S. typimurium, P. aeruginosa, B. pumillus and E. coli using agar well diffusion method. Ethanolic, aqueous and methanolic extracts of the plant were used at varying concentrations of 200 mg/ml, 100 mg/ml and 50 mg/ml respectively and it shows zone of inhibition, antimicrobial activity of neem leaves against human pathogenic bacteria. The present review article discuss the antimicrobial activity of Azadirachta indica that are reported in scientific references.

Key words: Azadirachtin, Leaf extracts, Escherichia coli, Pseudomonas aeruginosa, Salmonella typimurium, Staphylococcus aureus , Bacillus pumillus.

Anti-viral and Anti- fungal activity of Cinnamon *(Cinnamomum verum)*

Sangeetha B.P, Nisarga R, Manasa R, ShekharNaik R, Mahesh Shivananjappa*
Corresponding author: mayavishiva@gmail.com
Department of Food Science and Nutrition, Yuvaraja's college (Autonomous), University of Mysore, Mysuru, Karnataka, India.

ABSTRACT

Cinnamomum verum (*CV*) is also called as cinnamon, it belongs to the family *Lauraceae* .CV is a medicinal plant. Which is used in various field, particularly as an anti- inflammatory, anti-diabetic, anti- hypertriglyceridemia, anti- cancer, anti-bacterial, antifungal and also anti-viral agent. The Phytochemical compound citral present in CV plays an important role in antiviral and antifungal activity. The ethanolic extract of CV showed maximum zone of inhibition in *Penicillium brevicompactum* and minimum zone of inhibition in *Candida albicans.* The acetonic extract of CV showed maximum zone of inhibition in *candida albicans* and minimum zone of inhibition in *saccharomyces cerevisiae.* The methanol extract of CV showed maximum zone of inhibition in *candida albicans* and minimum zone of inhibition in *saccharomyces cerevisiae.* Cinnamon oil showed the maximum zone of inhibition in *Rhizomucor Sp.* All extracts of CV showed that it has antifungal activity. The hydroalcoholic extract of CV showed maximum survival peoples in terms of percentage in *HSV-1*. The aqueous extract of CV showed maximum activity in *H7N3 influenza A.* Above results confirm the inhibitory effect of cinnamon extract against several microbes.

Key words: lauraceae, HSV-1, hypertriglyceridemia, Rhizomucor Sp.

Anti-Microbial activity of Myrobalan (*Terminalia chebula)*

Tejaswini A S ,Kavya MR, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*

Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Terminalia chebula (TC) is commonly known as black or chebulic myrobalan belongs to the family *Combretaceae.* In Ayurveda because of its extraordinary health benefits it is called as "King of Medicines". It has pharmacological properties like antioxidant, antimicrobial, antidiabetic, antiinflamatory and neuroprotective activities. Numerous researches conducted on *TC* have confirmed the presence of wide range of that phytochemicals such as flavonoids, tannins, phenolic acids and other bioactive compounds .Experiments conducted on Gram positive and Gram negative bacteria *like E.coli, K.pneumoniae, S.typhi,* P.aeruginosa, S.epidermidies, *S.mutans, H.pylori, S.aureus,* and *P.mirabilis* etc indicated that aqueous extract, methanol extract, ethanol extract and ethyl acetate extract of TC increase the Zone of inhibition against microorganisms. The maximum zone of inhibition was found to be 32mm in methanol extract and aqueous extract {50ml ,10ml} of TC *on K.pneumoniae* ,the ethylacetate extract and ethanol extract showed minimum zone of inhibition{ 8mm} on *E.coli, S.typhi, P.aeruginosa and S.epidermidis* Above results confirms the inhibitory effects of TC extracts against several microbes..

Key words : Antioxidant, Antibacterial, zone of inhibition, Gram positive and Gram negative bacteria, Minimum inhibitory concentration.

Antimicrobial activity of green chiretta (*Andrographis paniculata)*

Meghana B C, Pooja N S, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of food science and nutrition,Yuvaraja's college (Autonomous) university of mysuru
Mysuru,Karnataka, India.
*Corresponding author:mayashiva@gmail.com

ABSTRACT

Andrographis paniculata (AP) popularly known as green chiretta belongs to the family Acanthaceae. The leaves and stem extracts are commonly used as a drug. It is used traditionally for the treatment of cancer, ulcer, high blood pressure, apart from this it also has different pharmacological activity such as antimicrobial, antiviral, anti-inflammatory, antipyretic and many more. several researches conducted on *Andrographis paniculata* have confirmed the presence of wide range of photochemicals and other bioactive compounds. Experiments conducted on Gram positive and Gram negative bactereia like *E.coli, S.aureus, S.typi, K.pneumonia,etc., S.typi,* shows maximam zone of inhibition in Ethanol extract at concentration(200µg/ml). *B.subtilis* shows maximam zone of inhibition in methnol and chloroform extract at concentration (200µg/ml). *P.vulgaris* shows maximum zone of inhibition in aqueous extract. *E.faecalis* shows maximum zone of inhibition in choloform and HCl extract at concentration (200µg/100µl). From the studies it came know that Andrographolide is the major bioactive compound which is responsible for the antimicrobial activity of *Andrographis paniculata*. Above results confirms the inhibitory effects of AP extracts against several microbes

Keywords: Andrographolide, Photochemicals, zone of inhibition,

Anti-Microbial Activity of Malabar nut *[Adhatoda vasica]*

Apoorva D S, Deepika M, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja`s College (Autonomous), University of Mysuru, Karnataka, India.
*Corresponding author: mayashiva@gmail.com

ABSTRACT

Adhatoda vasica, commonly known as Malabar nut [MN] or Vasaka, belongs to the family Acanthace. MN is a traditionally well-known plant in Ayurveda and unani medicine. The plant of parts used for treatment of various disorder and diseases like cough, bronchitis, asthma. This plant can exhibit Anti-asthmatic, Anti-diabetic, Anti-ulcer, Anti-tubercular, Anti-cancer and antimicrobial activity. This review is for explain about the antimicrobial activity of MN. Antimicrobial activity is the process of inhibiting the growth and activity of microorganism such as bacteria and fungi. The antimicrobial activity of MN leaves was studied by agar well diffusion method on *P. aeruginosa*, *K. pneumoniae*, *S. typi* and *S. aureus* with Methanolic, Chloroform and Hexane extract on keeping ciprofloxacin as constant and commercially available antibacterial agent. When The zone of inhibition was found to be maximum in methanol extract 17.4mm for(100mg/ml), then that of chloroform and hexane. The Ethanolic extract showed maximum zone of inhibition 13.1mm for (1000µg/ml) when compare to acetone, ethyl acetate effectiveness was more while petroleum ether showed minimum inhibition on *K. pneumoniae*, *E. coli*, *S. aureus*, *E. faecalis.* Therefor MN leaves can be a Potential herbal alternative to synthetic anti-microbial agent.

Key words: Ciprofloxacin, Ethyl acetate, Anti- asthmatic, *S. aureus*.

Anti-microbial activity of Guggul (*Commiphora wightii*)

Sushma S, Sushma I M, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*

Department of Food Science and Nutrition, Yuvaraja's college (Autonomous), University of Mysore,

Mysuru, Karnataka, India.

*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Commiphora wightii which belongs to the family burseraceae and plant belongs to class Magndiopsida, It is commonly known as "Guggul" which contains Guggulsterone as a main active compound of oleo-gum resin of guggul, it has pharmacological and clinical studies on its crude drug constituents which include antimicrobial, anti-bacterial, anti-inflammatory, anti-fertility, hepatoprotective, muscle relaxing, hypolipidemic, hypocholestronic and anti-obesity. The antimicrobial property is examined by extracting guggul in different components such as aqueous, ethyl acetate, methanol, and ethanol. Then testing it against few selected microorganisms like E. coli, *S. aureus, P. aeruginasa, B. cereus, Aspergillus flaveus, P. aeruginosa, S. aglactae. B. subtillis, S. agalactial*. The efficiency of these leaf extracts was compared to standard antibiotics like tetracycline. The zone of inhibition was from 4-15.50mm in the tested microorganisms above mentioned. The guggul of ethanol extract showed highest level of inhibition zone in *S.aureus* and *B. cereus*. The dichloromethane and methanol extract of guggul showed lowest level of inhibition zone in *P.aeruginosa* and *E.coli*. From this observation it is investigated that different extracts of *guggul* plant had antibacterial activity and anti-microbial activity on different microorganisms.

Keywords: - Commiphora wightii, guggul gum, Guggulsterone, tetracycline, Staphylococcus aureus.

Anti -microbial activity of fenugreek *(Trigonella foenum-graecum)*

Vinutha C, Koushik G C, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Trigonella foenum-graecum also known as fenugreek is an annual plant belonging to the family Leguminosae. The green leaves and seeds of fenugreek are used in medicinal applications as well as in food. Fenugreek is well known for its pharmacological properties including anti-bacterial, anti-oxidant, anti-cataract, hypocholesterolemia, anti-inflammatory and anti-diabetic activities. methanol, chloroform ,ethanol, hexane and acetone extract of fenugreek have potential antibacterial activity against gram +ve and gram -ve bacteria's such as *E. coli, S. typhi, P. aeroginosa, B. marcescens, S. aureus, staphylococcus*. Methanol extract of concentration [1000 mg/ml] showed maximum inhibition zone of 26mm in E. coli bacteria. Aqueous extract of concentration [100 mg/ml] showed minimum inhibition zone of 9.33 $\pm$ 0.57mm in *P. Aeroginosa*. This review highlights antibacterial effect of fenugreek extracts that have been reported in several scientific studies.

Keywords: Gram +ve, Gram –ve, Methanol, Chloroform, Ethanol, Hexane, Acetone.

Anti-microbial activity of Garlic (*Allium sativum*)

Varnitha T M, Thejashwini H M, Manasa R, Shekhara Naik R, Mahesh Shivananjappa*
Department of Food Science and Nutrition, Yuvaraja's college (Autonomous), University of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Allium sativum (AS) commonly known as garlic belongs to family Liliaceae. Garlic has been recognized for its medicinal properties for centuries. It has many pharmacological activities like anti-oxidant, anti-diabetic, anti-inflammatory, anti-microbial, anti-cancer, immunomodulatory, hepatoprotective and cardio-protective. Allicin is one of the active principles of freshly crushed garlic which shows anti-microbial activity on gram-positive and gram-negative bacteria, viruses

and fungi. The aqueous extract of AS showed maximum microbial inhibition concentration in *S. aureus, P. aeruginosa, E. coli* and maximum inhibition zone in *P. aeruginosa, S. aureus* and minimum inhibition zone in *E. coli*. The ethanolic extract of AS showed maximum bacterial inhibition concentration in *S. aureus and E. coli* and maximum inhibition zone in *S. aureus* and minimum inhibition zone in *E. coli*. Chloroform extract of AS showed maximum microbial inhibition concentration in *S. aureus, E. coli* and maximum inhibition zone in *E. coli* and minimum inhibition zone in *S. aureus*. Fresh raw garlic extract of AS showed most efficient inhibitory activity in *S. aureus* ATTC 33591 and *P. aeruginosa* ATTC 27853 was least susceptible to fresh garlic extract. The fresh garlic juice showed highest level of inhibition zone in *Candida albicans* and lowest level of inhibitory zone was observed in *Bacillus subtilis*. From all these experimental results it can be concluded that garlic has effective antimicrobial activity.

Key words: zone of inhibition, maximum inhibitory concentration.

Antimicrobial activity of Mint (*Mentha piperita*)

Darshini K P, Surabhi M, Manasa R, Shekhar Naik R, Mahesh Shivanajappa*

Department of Food science and Nutrition, Yuvaraja's College (Autonomous), University of Mysore, Mysuru, Karnataka, India.

***** Corresponding author: mayashiva@gmail.com

ABSTRACT

Mentha piperita is a medicinal herb and strongly scented herb which belongs to family Lamiaceae. Commonly known as mint. It has many pharmacological properties like antibacterial, antiviral, antifungal, antioxidant, anticancer and wound healing. Antimicrobial is an agent that kills microorganisms or stops their growth such as bacteria, fungi, or protozoan's. The anti-microbial property is examined by extracting mint against different components such as essential oils, ethanol extract, hydroalcoholic extract, menthol and menthone then testing it against few selected microorganisms like *E.coli, s.aureus, pseudomonas aeruginosa, Enterobacter aerogenes, bacillus cereus, s.epidermidis, Candida albicans.* Several researches conducted on Mentha piperita combination of in vivo and in vitro techniques such as microdilution, agar diffusion, and bioautography. Experiment conducted on gram positive and gram negative microorganisms like *B. cereus, S. aureus S. epidermidis,* etc. shows minimal zone of inhibition against Mentha piperita L. essential oil extraction at concentration(1.0µg/ml). *candida albicans* shows minimum zone of inhibition against hydroalcoholic extract at concentration of (100mg/ml). *E.coli and S. aureus* showed minimal zone of inhibition against ethanol extract at concentration of (1µl/ml). C. albicans showed minimal zone of inhibition against ethanol extract at concentration of (0.125 µl/ml). This review aimed to explore the basic and clinical description of antimicrobial activity of Mentha piperita.

Key words: Essential oil, Menthol, Menthyl acetate, Staphylococcus aureus, Staphylococcus epidermidis

Anti-microbial activity of Calendula *(Calendula officinalis)*

B Bhavana, Manasa R, ShekharaNaik, Mahesh Shivananjappa*
Department of Food science and Nutrition, Yuvaraj's college (Autonomous), university of Mysore, Mysuru, Karnataka, India.
*Corresponding author: mayavishiva@gmail.com

ABSTRACT

Abstract: *Calendula officinalis* (CO) commonly known as marigold. It belongs to Asteraceae family. It is widely used in traditional medicines which is popularly used in wound healing and as an anti-cancer, anti-bacterial and anti-inflammatory agent. This plant contains several bioactive compounds, including terpenoids, terpenes, carotenoids, flavonoids and polyunsaturated fatty acids. The exatract of petals parts were clearly superior for all bacteria especially the bacteria Pseudomonas aeroginosa. Petroleum ether (60-80%) and chloroform extract showed high antimicrobial activity against nearly all the test microorganisms. The extracts showed antimicrobial activity were subjected to minimum inhibitory concentration assay by two fold dilutions method. Petroleum ether, chloroform , ethanol and water extract exhibited in vitro anti bacterial activity. These results confirm the antibacterial activity of CO flowers and support the traditional use of the plant in the therapy of bacterial infection.

Keywords: Anti bacterial activity, inhibition, traditional use.

Anti-microbial activity of Sarpagandha [*Rauwolfia serpentina*]

Varsha S, Chandana HM, Manasa R, Mahesh Shivananjappa, Shekhara Naik R
Department of Food Science and Nutrition, Yuvaraja's college (Autonomous), University of Mysuru, Mysuru, Karnataka, India.

ABSTRACT

Rauwolfia serpentina (RS), also known as sarpagandha, is a significant medicinal plant, The sarpagandha is a species of flowering plant in the family apocynaceae which has been traditionally used in ayurveda for many years to treat the variety of diseases. The drug sarpagandha is cardiodepressant, hypnotic and sedative. It is used in hypertension, insomnia, sexual aggression and vertigo. The anti-microbial property is examined by extracting RS roots in different

components such as aqueous, methanol, ethyl acetate, Chloroform and hexane then testing it against few selected microorganisms like *B. subtilis, S. aureus, M. luteus, E. coli, P. vulgaris, A. niger, S. pneumoniae, K. pneumoniae, P. aeruginosa, S. cervisiae, S. typhimurium, Staphylococcus, C. albicans and E. faecalis*. Aqueous extract of 100mg/ml concentration showed an inhibition of 16 (mm)2 for *E. coli*. Whereas ethyl extract of 100mg/ml concentration showed 2.4 (mm)2 for *E. coli* growth. From this observation it is investigated that different extracts of *Rauwolfia serpentina* root had anti-microbial activity on different microorganisms. This review presents the anti-microbial activity of different extracts of RS roots on different micro-organisms. RS is a plant which is primarily used in preventing the various diseases caused by numerous micro-organisms such as inflammatory bowel disease, Crohn's disease, urinary tract infections caused by *E. coli*, pneumonia, ocular infection central nervous system infections caused by *S. aureus*, fatty liver abscess caused by *K. pneumoniae.* Above result confirms the inhibitory effects of sarpagandha extracts and sarpagandha against several microbes.

Key words: Apocynaceae, Gram-positive, Ayurveda, Root extracts.,

ORGANIZED BY

MASTD

MICROBIOLOGICAL ASSOCIATION FOR SCIENCE AND TECHNOLOGY DEVELOPMENT (MASTD), LUCKNOW, U.P.INDIA

&

GeneSpy
Creating significant value through strategic innovations

GENESPY RESEARCH SERVICES PVT LTD. MYSURU, KARNATAKA, INDIA

E-Mail: mastd2021@gmail.com, **Website: mastd.org.in**