Mangalore University | Indian Association of Biomedical Scientists(IABMS)

REMINISCENCES

39th Annual Summit of Indian Association of Biomedical Scientists (IABMS)

International conference on "Current concepts on the role of Indian medicine and phytoceuticals in maintenance of health"

Department of Studies and Research in Biochemistry
Jnana Kaveri, Post Graduate Centre, Chikka Aluvara, Kodagu - 571232

39th IABMS 2018

Mangalore University
Indian Association of Biomedical Scientists

39th Annual Summit of Indian Association of Biomedical Scientists

International conference on "Current concepts on the role of Indian medicine and phytoceuticals in maintenance of health"

Venue: Kaveri Quadrangle, Science Block, Jnana Kaveri, PG Centre
Mangalore University, Chikka Aluvara

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Organized by
Prof. Manjula Shantaram
Organizing Secretary & Director (I/C)
Department of Studies and Research in Biochemistry
Post Graduate Centre, Jnana Kaveri, Chikka Aluvara
MANGALORE UNIVERSITY
Thorenoor Post, Kushalnagar, Somawarpet TQ, Kodagu - 571232
Karnataka, India

TABLE OF CONTENTS

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39TH IABMS ANNUAL SUMMIT & INTERNATIONAL CONFERENCE
SCIENTIFIC PROGRAMME SCHEDULE

15th Nov. 2018

Time			
07:30- 08:00	Breakfast		
08:00 -09:00	Registration of Dr. Sarada Subramaniam Pre-Conference Workshop		
09:00 - 01:00	Pre-Conference Workshop – Lectures & Demonstrations on "Basics of Cell Culture & Applications in Drug Discovery"		Venue: Pushpagiri Hall
11.30 - 01: 00	Pre-Conference E.C. meeting		Venue: Bramhagiri Hall
01:00 - 02:00	Lunch		
02:00 - 03:30	Conference Registration		
03:30 - 03.45	Coffee Break		
04:00 - 06:00	Inaugural Session (Kaveri Quadrangle) Chief Guest: Dr. A.K. Singh; Guests of Honour: Prof. P.Balaram; Prof. M.K. Surappa; Prof. K. Byrappa		
06:00 - 07:00	Key note address by Padmabhushan Prof. P. Balaram		
07:00 - 08:00	M.K. Nambiar oration by Prof. T.Thirunalasundari & Prof. Sundaram Subramanian oration by Prof. G.K.Pal		
08:00 - 08:30	Cultural Program		
08:30 - 09:30	Banquet		Venue: Harangi Quadrangle

End of Day 1

16th Nov. 2018 (Day 2)

07:30 - 08:30	Breakfast		
08:30 - 09:00	Conference Registration (Day 2)		
09:00 - 01:00	First Session: Traditional Medicine		Venue: Pushpagiri Hall
Chair: Prof. T. Thirunalasundari	Co-Chair : Dr. K. S. Chandrashekharaiah		Rapporteur : Dr. V. Hemamalini
09:00 - 09:30	Prof. G. Rajgopal	Annamalai University Annamalainagar	Title:Garlic(*Allium sativum*)-The best Phytomedicine
09:30 - 10:00	Prof. Shashikala R. Inamdar	Karnatak University, Dharwad	Title: Lectins from medicinal plants and fungi: as possible cancer diagnostic and therapeutic agents
10:00 - 10:30	Dr. Farhath Khanum	DFRL, Mysuru	Title: Phytochemicals for maintenance of health and as a functional food
10:30 - 10:45	Coffee Break		
11:00 - 11:30	Prof. Hannah R. Vasanthi	Pondicherry University Puducherry	Title:Salubrioussynergistic potency of ginger and garlicin ameliorating pathophysiology of gastric cancer
11:30 - 01:00	Oral presentation session by delegates		
01:00 - 02:00	Lunch		

02:00 - 05:00	Second Session: Traditional Medicine		Venue: Pushpagiri Hall
Chair: Prof. Shashikala R. Inamdar	Co-Chair: Prof. D. K. Dhawan		Rapporteur: Dr. K. K. Dharmappa
02:00 - 02:30	Prof. Cletus D'Souza	Mangalore University Mangalore	Title: Phytonutrients and plant based medicine-how safe are they?
02:30 - 03:00	Prof. Chandrashekar K.R.	Mangalore University Mangalore	Title: Plants, Tribals and Molecules
03:00 - 03:30	Prof. Vadlapudi Kumar	Davangere UniversityDavangere	Title: Phytoceuticals of *Anisomelesindica*kuntze
03:30 - 03:45	Coffee Break		
03:45- 05:00	Oral presentation session by delegates		
05:15 - 06:15	Poster Evaluation		
6:15 - 08:00	General Body Meeting of IABMS		
07:45 - 08:45	Dinner		

End of Day 2

17th Nov 2018 (Day 3)

09:00 - 01:00	Third Session: Traditional Medicine		Venue: Pushpagiri Hall

Chair:Hannah R. Vasanthi	**Co-Chair: Prof. Rajat Sandhir**		**Rapporteur: Dr. I. K. Manjula**
09:00 - 09:30	Prof. Padmakumar K.	University of Kerala Thiruvananthapuram	Title: Marine derived Phytoceuticals
09:30 - 10:00	Prof. B.K.Sarojini	Mangalore University Mangalore	Title: Role of active principles of papaya leaf extract - collagen composites in wound healing - a study
10:00 - 10:30	Prof. Suchetha Kumari N.	K S Hegde Medical AcademyNITTE (Deemed) UniversityMangalore	Title:Effects of omega-3 fatty acids on cancer
10:30 - 11:00	Dr. Padmini E	Government Arts and Science College, Perumbakkam Chennai	Title:DLX5 protein and vasoregulators are potential diagnostic and therapeutic targets in pre-eclamptic trophoblasts
11:00 - 11:15	**Coffee Break**		
11:15 - 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 – 03:30	**Award Session**		
03:30 - 04:30	**Valedictory Function**		
16th Nov. 2018 (Day 2)			
07:30 – 08:30	**Breakfast**		
08:30 - 09:00	**Conference Registration (Day 2)**		
09:00 - 01:00	**First Session: Life Style Diseases**		**Venue: Bramhagiri Hall**
Chair: Dr.M. A. Hussain	**Co-Chair:Dr.K.C.Pushpalatha**		**Rapporteur: Mr. B.S.Srinath**
09:00 - 09:30	Prof. Subrata Ghosh	Hooghly Mohsin College, West Bengal	Title: Altered erythrocyte topography by surface nanoscopy and metabolic stress responses of female labourers of West Bengal during manual material handling
09:30 - 10:00	Prof. D. K. Dhawan	Punjab University, Chandigarh	Title:Role of Phytochemicals in prevention and detection of cancer-An overview of our research
10:00 - 10:30	Prof. D. C. Mathangi	Chettinad Academy of Research and Education, Tamil Nadu	Title: Obstructive sleep Apnea – Knowledge, challenges and opportunities
10:30 – 10:45	**Coffee Break**		
11:00 - 11:30	Prof. Rajat Sandhir	Punjab University, Chandigarh	Title: Altered Insulin receptor signalling is involved in streptozotocin rat model of sporadic Alzheimer's disease
11:30 - 12:00	Dr. Kanchan Kapoor	Government Medical College, Chandigarh	Title: Histogenesis of lumbar sympathetic chain in human foetus.
12:00 - 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 - 05:00	**Second Session: Life Style Diseases**		**Venue: Bramhagiri Hall**
Chair: Prof. Subratha GhoshCo-Chair: Prof. Devashish Sen			**Rapporteur: Dr. Ashwini Shetty**
02:00 - 02:20	Dr.Harish Prashanth K.V.	Central Food Technological Research Institute, Mysore	Title: Neurotoxicity: the food neurotoxins contributing to neurodegenerative diseases and possible dietary solutions
02:20 - 02:40	Dr. Poornima Priyadarshini C.G.	Central Food Technological Research Institute, Mysore	Title:Dipeptidyl peptidase family of proteins: the multifaceted therapeutic targets of lifestyle diseases
02:40 - 03:00			
03:00 - 03:20	Dr. Maji Jose	Yenepoya Dental College, Yenepoya (Deemed) University, Mangalore	Title:A scientific validation of indigenous oral health and hygiene practices
03:20 - 03:40	Dr. Prabir Kr. Mukhopadhyay	Presidency University, West Bengal	Title: Modulated protein diet with high casein and pea protects arsenic-Induced ovo-uterine disorders in adult Wister rats
04:00 - 04:15	**Coffee Break**		
04:15 - 05:00	**Oral presentation session by delegates**		
05:15 - 06:15	**Poster Evaluation**		
6:15 - 08:00	**General Body Meeting of IABMS**		
07:45 - 08:45	**Dinner**		
End of Day 2			
17th Nov. 2018 (Day 3)			

09:00 - 01:00	**Third Session: Life Style Diseases**		**Venue: Bramhagiri Hall**
Chair:Prof. Cletus D'Souza	**Co-Chair: Dr. Padmimi. E**		**Rapporteur: Dr.Maneemegalai**
09:00 - 09:30	Prof. K. Kemparaju	University of Mysore, Mysuru	Title:*In vitro* mode of action of Indian saw-scaled viper and cobra venoms on neutrophils; an emphasis on netosis
9:30 - 10:00	Dr. Keshav Prasad T.S.	Yenepoya Research Centre, Yenepoya (Deemed) University, Mangalore	Title:Mass spectrometry based functional proteomics to identify actionable molecules in human diseases
10:00 - 10:30	Prof. Manohar Shinde	Tumkur University, Tumakuru	Title: Prospecting of whole *mung* bean seed phytochemicals for the management of obesity and Type II Diabetes
10:30 - 11:00	Prof. Rajeshwar Achur	Kuvempu University, Shimoga	Title: Association between inflammatory cytokine responses and anemia during severe malarial infections
11:00 - 11:15	**Coffee Break**		
11:20 - 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 - 03:30	**Award Session**		
03:30 - 04:30	**Valedictory Function**		
16th Nov. 2018 (Day 1)			
07:30 – 08:30	**Breakfast**		
08:30 - 09:00	**Conference Registration (Day 2)**		
09:00 - 01:00	**First Session: Biochemistry/Microbiology/ Genetics**		**Venue: Hemavathi Hall**
Chair:Prof. M. Jayashankar	**Co-Chair: Prof. D Sakthisekaran**		**Rapporteur: Dr. Anandi Bagchi**
09:00 - 09:30	Dr. Ankur Mutreja	University of Cambridge, United Kingdom	Title:Whole genome sequencing for better understanding the true burden, evolution and potential control of amr
09:30 - 10:00	Dr.Anjali Apte Deshpande	Founder/Director Central Dogma Pvt Ltd, Pune	Title: Journey of biosimilar from bench to bedside
10:30 - 10:45	**Coffee Break**		
11:00 – 11:30	Dr. Mamatha Ballal	Kasturba Medical College, Manipal (Deemed) University, Manipal	Title:Infection & antimicrobial resistance: Farm to fork -a global challenge
11:30 - 12:00	Dr. Rekha P. D.	Yenepoya Research Centre,Yenepoya (Deemed) University, Mangalore	Title:Association of urinary microbiome with urolithiasis: Cause or consequence?
12:00 - 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 - 05:00	**Second Session: Biochemisrty/Microbiology/ Genetics**		**Venue: Hemavathi Hall**
Chair: Prof. G. Rajagopal	**Co-Chair: Prof. D.C. Mathangi**		**Rapporteur: Dr. Manjunatha J.G.**
02:00 - 02:30	Prof. Girish K.S.	Tumkur University, Tumkur	Title:Berberine mitigates high glucose-potentiated platelet aggregation and apoptosis by modulating aldose reductase and NADPH oxidase activity
02:30 - 03:00	Dr. K. Neelakanteshwar Patil	Central Food Technological Research Institute, Mysore	Title: Characterization of *listeria monocytogenes* reca protein: implications in recombination and in antibiotic resistance
03:00 - 03:30	Dr. Gurjith Kaur	Government Medical College and Hospital, Chandigarh	Title: Birth defects- its prevention and management
03:30 – 04:00	Prof. Prashantha Naik	Mangalore University, Mangalore	Title: Ames Test- A rapid and Sensitive Test for Mutagenicity, Carcinogenicity and Genoprotective Studies
04:00 - 04:15	**Coffee Break**		
04:15 - 05:00	**Oral presentation session by delegates**		
05:15 - 06:15	**Poster Evaluation**		

6:15 - 08:00	**General Body Meeting of IABMS**		
07:45 - 08:45	**Dinner**		
End of Day 2 (Day 2)			
17th Nov. 2018 (Day 3)			
09:00 - 01:00	**Third Session: Biochemistry/Microbiology/ Genetics**		**Venue: Hemavathi Hall**
Chair:Prof. S. Venkataraman	**Co-Chair:Dr. Gurjit Kaur**		**Rapporteur: Mr. Rajkumar S. Meti**
09:00 - 09:30	Dr. K. Ashok Prabhu	Kasturba Medical College Manipal (Deemed) University	Title: Biomarkers- in health and disease
09:30 – 10:00	Chandrashekhar G. Joshi	PG Centre, Mangalore University	Title:Endophytes of traditional medicinal plants – a new source of novel medicine
10:00 – 10:30	Dr. S. Keshav Bhat	Arecanut Research & Development Foundation Mangalore	
10:30 - 10:45	**Coffee Break**		
10:45 – 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 – 03:30	**Award Session**		
03:30 - 04:30	**Valedictory Function**		
16th Nov. 2018 (Day2)			
07:30 – 08:30	**Breakfast**		
08:30 - 09:00	**Conference Registration (Day 2)**		
09:00 - 01:00	**First Session: Drug Discovery & Development**		**Venue: Netravathi Hall**
Chair: Dr.Gopal Marathe K.	**Co-Chair: Dr. K. Neelakanteshwar Patil**		**Rapporteur: Dr. S. Ashwini**
09:00 - 09:30	Dr. Nand K. Relan	Stony Brook University Medical Centre,Stony Brook, New York, USA	Title: Applications of molecular imaging in clinical management of disease processes
09:30 - 10:00	Prof.Suresh K. Sharma	Punjab University, Chandigarh	Title: Survival and logistic regression techniques in Biomedical Sciences
10:00 - 10:30	Dr. Mausumi Sikdar Bhakta	Presidency University,West Bengal	Title: Mangrove reduced silver nano particles: An effective alternative to antibiotics against uropathogens
10:30- 10:45	**Coffee Break**		
11:00 - 11:30	Dr. Santosh R. Kanade	University of Hyderabad Telangana	Title: Positive and negative modulation of protein arginine methyltransferase 5 and methylosome protein (prmt5-mep50) and its implications
11:30 - 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 - 05:00	**Second Session: Drug Discovery & Development**		**Venue: Netravathi Hall**
Chair: Prof. K.M. Balakrishna	**Co-Chair: Dr. Rekha P.D.**		**Rapporteur: Dr. Kanchan Kapoor**
02:00 - 02:30	Prof. Manjunatha Pattabi	Mangalore University Mangalore	Title: Noble metal nanostructures for biological applications
02:30 - 03:00	Prof. Balakrishna Kalluraya	Mangalore University Mangalore	Title:Drug development and synthetic design
03:00- 03:30	Prof. Balaji Prakash	Dept. of Molecular Nutrition CFTRI, Mysore	Title: Rational Design of anti-bacterial molecules – Combining new and old strategies for the discovery of new drugs.
03:30 - 04:00	Dr. Bhagawat V.R.	SBH Govt. Medical College, Dhule, Maharashtra	Title: Lead exposure & Bone health
04:00 - 04:15	**Coffee Break**		
04:15 - 05:00	**Oral presentation session by delegates**		
05:15 - 06:15	**Poster Evaluation**		
6:15 - 08:00	**General Body Meeting of IABMS**		
07:45 - 08:45	**Dinner**		
End of Day 2			

17th Nov. 2018 (Day 3)			
09:00 - 01:00	**Third Session: Drug Discovery & Development**		**Venue: Netravathi Hall**
Chair: Prof. V.R. Bhagwat	**Co-Chair: Dr. Santosh R. Kanade**		**Rapporteur: Dr. Maji Jose**
09:00 - 09:30	Prof. B.S. Vishwanath	University of Mysore, Mysore	Title: Celastrol modulates inflammation through inhibition of the catalytic activity of mediators of arachidonic acid pathway
09:30 - 10:00	Dr. Manjunatha J.G.	FMKMC College, Madikeri, Mangalore University	Title: Electrochemical analysis of nigrosine using carbon paste electrode
10:00 - 10:30	Prof. Smitha Hegde	NITTE University Centre for Science Education and Research, Mangalore	Title: Plant tissue culture: An *in-vitro* option for sustainable synthesis of phytochemicals.
10:30 - 10:45	**Coffee Break**		
11:00- 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 – 03:30	**Award Session**		
03:30 - 04:30	**Valedictory Function**		
16th Nov. 2018 (Day 2)			
07:30 – 08:30	**Breakfast**		
08:30 - 09:00	**Conference Registration (Day 2)**		
09:00 - 01:00	**First Session: AYUSH**		**Venue: Sharavathi Hall**
Chair: Prof. Rajeshwar Achur	**Co-Chair:Prof. S.K. Sharma**		**Rapporteur: Dr Mausumi Sikdar Bhakta**
09:00 - 09:30	Prof. S. Karthikeyan	University of Madras, Chennai	Title: Silymarin and Silibinin – Our investigations on hepatoprotective and antioxidant principles against drugs and chemicals induced toxic insults of liver
09:30 - 10:00	Prof. C.S. Gautam	Government Medical College & Hospital, Chandigarh	Title:Herbal & allopathic drug interactions: is it time to wake up?
10:00 - 10:30	Prof. Devashish Sen	Presidency University, Kolkata	Title:Chrono-nutrition: an emerging aspect of nutritional assessment
10:30- 11:00	Prof. B. Shivananda Nayak	The University of West Indies, Trinidad & Tobago	Title:Wound-healing activity of the skin of the common grape (*Vitisvinifera*)
11:00 - 11:15	**Coffee Break**		
11:50 - 01:00	**Oral presentation session by delegates**		
01:00 - 02:00	**LUNCH**		
02:00 - 05:00	**Second Session: AYUSH**		**Venue: Sharavathi Hall**
Chair: Prof. S. Karthikeyan	**Co-Chair: Prof. C. S. Gautam**		**Rapporteur: Dr.Sneha Rani. A.H.**
02:00 - 02:30	Dr. Gopal Marathe K.	University of Mysore, Mysuru	Title:Platelet activating factor receptor antagonist(s) from *Tylophora asthmatica*
02:30 - 03:00	Dr.Rajesh A. Udapudi	JSS Ayurveda Medical College & Hospital, Mysuru.	Title: A clinical study on the management of sthaulya (obesity) through erandamūlādi lekhana basti with navaka guggulu
03:00 - 03:30	Dr. Santosh Kumar J.	Karnataka Ayurveda Medical College, Mangalore	Title:Less explored dimensions of phytoceuticals in Indian medicine
03:30 – 04:00	Dr. Shivanand Gavimath	JSS Ayurveda Medical College & Hospital, Mysuru.	Title: An efficacy of phytoceutically potent selective classical single drug therapy ''*eka moolika prayoga*'' in the management of ophthalmic and Ent manifestations – An Ayurveda perspective
04:00 - 04:15	**Coffee Break**		
04:15 – 05:00	**Oral presentation session by delegates**		
05:15 - 06:15	**Poster Evaluation**		
6:15 - 08:00	**General Body Meeting of IABMS**		
07:45 - 08:45	**Dinner**		
End of Day 2			
17th Nov. 2018 (Day 3)			

02:00 – 03:30	**Award Session**
03:30 - 04:30	**Valedictory Function** **Chief Guest : Prof. Indrani Karunasagar** **Guests of Honour: Prof. S.N. Hegde ; Sri V.V.Bhat Former IAS Officer**

ABSTRACTS

Keynote Address

Padmabhushan Prof. P. Balaram

Former Director of IISc, Bengaluru

"CHEMICAL BIOLOGY OF NATURAL PRODUCTS: A BRIDGE BETWEEN MODERN AND TRADITIONAL MEDICINE"

ORATION

CHALLENGES AND PROSPECTS IN THE DEVELOPMENT OF ANTIVIRAL THERAPEUTICS FOR HEPATITIS.

T. Thirunalasundari
Former Professor & Head, Dept. of Industrial Biotechnology
Bharathidasan UniversityTiruchirappalli – 620 024
Tamil Nadu, India.
drttns@gmail.com

M. K. NAMBIAR MEMORIAL ORATION AWARD

Being the largest internal organ of the human body, liver is considered as the warehouse of the body that removes toxic waste products via bloodstream and plays a major role in maintaining the levels of nutrients, cholesterol, hormones, sugars etc., and secretes bile that is important for digestion. Inflammation of the liver leads to Hepatitis, which may be incurred due to either infectious microorganisms or via autoimmune disorders, metabolic diseases, alcohol consumption and drugs. Hepatitis is classified based on the viruses that affect the liver: HAV, HBV, HCV, HDV and HEV. Treatment for hepatitis rely on the use of antiviral drugs. However adverse side effects and the cost are the major problems faced in the present-day scenario of drug treatment. Eradicating such viral diseases is also a challenging process, as the viruses resist the effective antiviral treatments due to generation of viral escape mutants. Natural resources serve with vital biodiversity towards discovering novel antivirals. In the thrust to survey the plant-derived metabolites as antiviral agents, many number of medicinal plants have been explored. Indian medicinal plants like *Phyllanthus amarus, Eclipta alba* and *Boerhavia diffusa*, *Andrographis paniculata* are a treasure with antivirals and potential hepatoprotective activity. Antiviral properties can be tested either by direct or indirect methods to evaluate potential therapeutic properties. Apart from the conventional serological tests, molecular methods like RT-PCR, sequence-based information, genotyping etc., helps in diagnosis of the disease with higher sensitivity and specificity. Indirect methods of *in-vitro* evaluation assays like DNA polymerase inhibition activity, RNA dependent RNA polymerase activity is efficient in determining the cytopathic effect of the antiviral molecules. A rational approach of today‘s progressive research is, *in-silico* molecular docking that virtually screens antiviral drugs reducing cost and time. Novel drug delivery strategies for hepatitis like anti-HBV/ HCV therapeutics is possible with si-RNA based site specific targeting of the virus. High-throughput screening, Miroarray expression studies and Next-generation sequencing analysis provide new generation screening assays for detection and development of antivirals. Hence, natural products with robust antiviral activity along with integrative research platforms has revolutionized in identifying better therapeutic leads.

SYMPATHOVAGAL HOMEOSTASIS: THE KEY TO PERFECT HEALTH

G. K. Pal
Dean, JIPMER, Karaikal (Puducherry),
Dean, Faculty of Medicine, Pondicherry University,
Senior Professor, Department of Physiology, JIPMER, Pondicherry – 605 006. Prog. Director, Advance Center for Yoga Therapy Education and Research (ACYTER), JIPMER, Pondicherry – 605 006.
drgkpal@gmail.com

PROF. S. S. MEMORIAL ORATION OF IABMS, 2018

Any factor that increases susceptibility of the individual to cardiovascular disease (CVD) is considered as a cardiovascular (CV) risk. CV risks could be physical, physiological, or psychosocial. There are many known CVD risk factors. Though few of them such as family history, age and gender are unmodifiable, many of them are modifiable. The modifiable CV risks include obesity, smoking, lack of physical activity, prehypertension, hypertension, dyslipidemia and atherogenic risk, insulin resistance, prediabetes, diabetes, retrograde inflammation, unhealthy diet, psychosocial stress and work stress.

Diabetes, hypertension and CVD are more prevalent in Indian subcontinent and they account for 52 per cent of deaths and 38 per cent of disease burden as per WHO report on South East Asia Region (SEAR). Assessing a person's CV risk has become the accepted way to target the preventive management of subjects who are asymptomatic but at high risk of CVD. Physiological parameters of CV risks are assessed by spectral analysis of HRV, continuous BP variability by Finapres and color Doppler. The Framingham risk score (FRS) for CVD has evolved as a validated means for predicting CVD risk in asymptomatic patients. Risk is considered low if the FRS is less than 10%, moderate if FRS is between 10% to 19% and high if FRS is 20% or more. Metabolic syndrome is an important determinant of CV risk. Till date, no systematic study has been conducted from SEAR for assessment and prevention of CVD. Moreover, FRS often underestimates the CV risk in Asians, in younger patients and subjects with low-socioeconomic status. The concern for cost-effectiveness of CVD interventions in developing countries is growing. Presently, there is a bias towards pharmaceutical interventions in CVD control in both developed and developing nations. While the burden of CVD is alarming in countries of SEAR, future research should put greater emphasis on non-clinical interventions to reduce the economic burden of CVD control. In order to overcome this cost-effective burden in India, we propose Yoga therapy as intervention module in prevention of CVD risks.

The basis of yoga in prevention of CVD and reduction in CV risks are derived from the fact that yoga attains holistic improvement of health through body (physical-physiological) – mind (psychological) homeostasis by primarily attaining sympathovagal balance. Irrespective of the etiology, sympathetic overactivity has been recognized as the main pathophysiologic mechanism in the genesis of CVD and metabolic syndrome. Sympathovagal imbalance owing to sympathetic overactivity and vagal withdrawal is reported to be the basis of many clinical disorders including CVD. Recently we have reported the contribution of vagal inhibition in the causation of CV risk. However, the role played by vagal withdrawal has been under-reported. Improvement of vagal tone is the key to achieve stable homeostasis through sympathovagal balance. Therefore, practice of yoga, especially pranayama that aims at improving vagal tone and reducing sympathetic activity appears to be promising in reducing the CV risks.

INVITED LECTURES

RATIONAL DESIGN OF ANTI-BACTERIAL MOLECULES – COMBINING NEW AND OLD STRATEGIES FOR THE DISCOVERY OF NEW DRUGS.

Balaji Prakash, FNASc
Senior Principal Scientist & Professor (AcSIR).
Head, Department of Molecular Nutrition
CSIR-Central Food Technological Research Institute Mysore 570 020. Karnataka.
India

The importance of understanding three-dimensional structures of proteins to microbiology cannot be undermined. Antibiotics, kill microbes by inhibiting few of the essential enzymes involved in the metabolic pathways. Most known antibiotics are structurally analogous to the substrate of the enzyme. The main concern regarding such antibiotics are their selectivity and cross reactivity to the host enzymes. A new method to approach this problem is the structural based design of drugs. Rationalizing the effect of most anti-microbial molecules that are known today require an understanding of structure-function relationships of target proteins/enzymes that these molecules bind. Often inhibitors bind active sites of enzymes and inhibit their action. However, such inhibitors necessarily resemble the natural ligands of the enzyme, which compromises selectivity. From a structural perspective, bacterial enzymes that share homologues in the host (humans), also share a similar active site. Hence, such inhibitors not only bind the bacterial enzyme but also its human counterpart, which is not desirable as the latter leads to side effects. In addition, several unrelated enzymes share a similar ligand (such as ATP, GTP, NAD, NADP, FAD, FADH etc.) which implies that the inhibitor that competes with such ligands would also bind the other enzymes. This further increases non-specific binding. One way to circumvent this problem is to generate specific binders. However, this is easier said than done. Our attempts therefore have been to find specific binders based on the understanding of how ligand binding, structure-function relationships, regulation and promiscuity (ability to bind several similar ligands) vary across species. This understanding calls for a rigorous basic research which then translates into meaningful technologies and the discovery of new antibiotics. We will discuss this important aspect that has relevance to designing novel antibiotics against bugs that are increasingly becoming drug resistant and strategies to combine with the conventional methods to identify new inhibitors.

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DRUG DEVELOPMENT AND SYNTHETIC DESIGN

Balakrishna Kalluraya, Ph.D., FRSC (London)
Professor, Chairman UG & PG BOS in Chemistry
Department of Chemistry, Mangalore University Mangalagangothri-574199
bkalluraya@gmail.com

Natural products are a source of variety of bio-active molecules. They include products isolated from plants, animals, microorganisms, fungi, etc. Within the field of organic chemistry, the definition of natural product is usually restricted to mean purified organic compounds isolated from natural sources that are produced by the pathway of primary or secondary metabolism. Natural products sometime have therapeutic benefit as traditional medicines for treating diseases, yielding knowledge to derive active components as lead compounds for drug discovery. However recently natural sources/ products have received declining attention by pharmaceutical industry partly due to unreliable access and supply of materials, intellectual property concerns, seasonal or environmental variability of composition and loss of source due to rising extinction rates. Even, then this area is an inspiring and very important area of Organic Chemistry, particularly with the point of synthetic organic chemists. Not only the isolation, but the total synthesis is always challenging one for a chemist. Further during the total synthesis, the chemist come across with many inferredials which may show more powerful activity and may become the lead compound in drug discovery. So synthetic chemists are always fascinated towards the natural products, their isolation and total synthesis. So, in this presentation our attempts for the synthesis of a natural product isolated from marine fungus will be explained. Also, the general idea of drug design and discovery methods will also be discussed.

PHYTONUTRIENTS AND PLANT BASED MEDICINE-HOW SAFE ARE THEY?

Cletus J. M. D'Souza
Adjunct Professor, Department of Biochemistry, Mangalore University, Mangalore
Cletus211@gmail.com

About 2500 years ago, Hippocrates is supposed to have said ―Let food be thy medicine...‖, even though there is no such statement in his writings, or even evidence for having said it. That food can have medicinal value is a fairly recent concept. Studies have also shown plant-based eating can improve not only body weight, blood sugar levels, and cholesterol, but also emotional states, such as depression, anxiety, fatigue and a sense of well-being. Fruit and vegetable -based diets may help prevent, treat, or even reverse some of the leading causes of chronic diseases and death, including heart disease, type 2 diabetes, and hypertension and neurodegenerative diseases. Plant-based foods contain more than 100,000 different *phyto*-nutrients, but the biological effects of these phyto-nutrients are still controversial and subject to debate. With increasing cost of medical health there is a paradigm shift from illness to wellness. More people are turning to these phyto-nutrients as source of wellness and alternate medicine. Consequently, these nutritional supplements have become a 250 billion dollars industry. However, the biological effects such as toxicity and drug interactions are not understood. According to the 16th century herbalist philosophy called Doctrine of signatures, it is believed that fruits and vegetables share aesthetic properties with the organ they benefit. Whether this is true or not only scientific experimentation can prove. For example, Blueberries have anthocyanins that may help with memory. Tomatoes are rich in the red pigment lycopene, which may help target heart disease; ginger has gingerols that may help with hypertension. intake of citrus has been associated with reduced stroke risk because of its phyto-nutrient hesperidin, which appears to increase blood flow throughout the body, including the brain.Although having phyto-nutrients in a pill appears to be an attractive solution to those who want to supplement their diet, it may not give the same health benefits- the whole is often greater than the sum of its parts. For example, Beta carotene pills may actually increase cancer risk, as opposed to the whole carrot, which may lower the risk. ―If little is good, more is better‖ may not be true especially where phyto-nutrients and phyto medicines are concerned. Whether or not Hippocrates said it, food should indeed be our medicine.

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ROLE OF PHYTOCHEMICALS IN PREVENTION AND DETECTION OF CANCER-AN OVERVIEW OF OUR RESEARCH

D. K. Dhawan
Professor, Department of Biophysics, Panjab University, Chandigarh
dhawan@pu.ac.in

Cancer is a complex heterogeneous disease and is considered as the second deadliest disease of mankind after heart disease. Cancer is a group of diseases characterized by unregulated division and proliferation of cells. On the basis of theiir original locations, cancers are classified into various types which include lung, colon, breast, glioma, myelomas and prostate. Cancer advances through three steps viz., initiation, promotion and progression. This multistage process is believed to bypass normal growth mechanisms and aids in furtherance of tumorigenesis. Initiation involves the primary attack to the cells by various factors such as environmental pollutants, heavy metals, radiation and xenobiotics. The proto-oncogenes which are present in cell may become oncogenes as a consequence of mutations or increase expressions. Proto-oncogenes translate certain proteins that regulate cell cycle and differentiation. Proto-oncogenes upon interaction with certain undesired signals mutate to oncogenes. The cells which are under stress and in the process of promoting proto-oncogenes to become oncogenes due to undesired signals become susceptible for initiation of apoptosis, a process that leads to death of cell. But evading apoptosis or dodging the cell death signals through blocking the extrinsic and intrinsic pathways caused by over expression of anti-apoptotic protein BCl-2 and loss of BAX the apoptotic protein, the cells become immortal, do not die and start proliferating. So, cancer cells can mass together to form a tumor and as cancer progresses, it metastasizes by invading the surrounding

tissues, entering the blood, spreading and establishing colonies in distant parts of body through angiogenesis. Further, Sialic acids(N-acetyl neuraminic acid) are a family of 9-carbon amino sugars which are present on the outermost end of glycans chains are the back-bone of cells and their over expression is well correlated with the metastatic potential of tumor cells. Sialic acids help in cell adhesion but during tumor development, the increased proliferation of cells lead to increase in negative charge which make cells to repel thereby causing cells to move from the place of origin to other sites and hence results in metastasis. Various biomolecules show diverse expressions during metastasis which can be used as appropriate targets for detection, prevention and treatment of different types of cancers. Cancer which is a multistep process affords many opportunities for development of xenobiotics or phytochemicals that can target appropriate indices related to varied mechanisms occurring in cancer cells during stages of initiation, promotion and progression and can stop the cascading process of turning normal cell into a malignant cell. Plants have been extensively used for medicinal purpose that mitigate disease and promote health. Plants synthesize various phytochemicals that include polyphenols and carotenoids. Polyphenols are among the most widely occurring natural antioxidants in fruits and vegetables and have been reported to exhibit chemopreventive properties. Over the past couple of years, my team of research fellows has created various models of cancer in experimental animals to understand the molecular mechanisms involved in affording chemoprevention by various phytochemicals. We have also developed In Vitro models using colon cancer HT-29 and glioma C-6 cell lines for assessing the anti-cancer effects of various xenobiotics and also to undertake internalization studies for labeling phytochemicals with radionuclides ^{99m}Tc and ^{68}Ga.We have shown that Curcumin alone and in combination with Quercetin or Resveratrol appreciably improved antioxidant machinery and lung histoarchitecture which were altered following Benzo (a) induced lung carcinogenesis. Further, our studies showed hyper-phosphorylation of P53 and decreased activities of caspase 3 and caspase 9 during Benzo(a) induced lung carcinogenesis which interestingly revealed the reverse trend upon simultaneous supplementation with Curcumin alone and in combination with Quercetin or Resveratrol. Further, in a recent study published in International Journal of Cancer, we have shown that Olive oil markedly decreased the expression of inflammatory and angiogenic markers, modulated the apoptotic machinery by restoring the expression of pro-apoptotic genes in DMH-induced colon cancer in rats. Furthermore, inverse relationship between gene expression and DNA methylation, deviant miRNA pattern and miRNA silencing mediated by aberrant DNA methylation was also shown in DMH-treated rats, which was potentially reversible upon olive oil treatment. Thus our research in the area of colon cancer is a step forward to advocate that olive oil has the potential to play an imperative role in epigenetic therapy by altering NF-Kb and apoptotic pathways via targeting non coding RNAs and methylation machinery that effect epigenome to prevent colon carcinogenesis. We have also developed radiopharmaceuticals ^{99m}Tc labelled resveratrol and ^{99m}Tc labelled resveratrol loaded gold nanoparticles as imaging modalities for the detection of colon cancer.

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PHYTOCHEMICALS FOR MAINTENANCE OF HEALTH AND AS FUNCTIONAL FOODS

Farhath Khanum
Scientist G, Head, Nutrition, Biochemistry and Toxicolgy, DFRL, Mysore
farhathkhanum@gmail.com

Plants have been the foundation for a significant part of human medicine and for many of the most widely used drugs designed to prevent, treat, and cure disease. Phytochemicals—the bioactive non nutrient plant compounds in fruit, vegetables, grains, and other plant foods—have been linked to reductions in the risk of major chronic diseases. It is estimated that more than 5000 phytochemicals have been identified, but a large percentage still remain unknown and need to be identified before their health benefits are fully understood. However, more and more convincing evidence suggests that the benefits of phytochemicals in fruit and vegetables may be even greater than is currently understood because oxidative stress induced by free radicals is involved in the etiology of a wide

range of chronic diseases. Prevention is a more effective strategy than is treatment of chronic diseases therefore the thrust on functional/neutraceutical foods. Functional foods that contain significant amounts of bioactive components may provide desirable health benefits beyond basic nutrition and play important roles in the prevention of chronic diseases. Regular consumption of fruit and vegetables is associated with reduced risks of cancer, cardiovascular disease, stroke, Alzheimer disease, diabetes, cataracts, and some of the functional declines associated with aging. The major mechanism of action demonstrated is by acting as antioxidants. The key question is whether a purified phytochemical has the same health benefit as does the whole food or mixture of foods in which the phytochemical is present. Another question is how much of the antioxidants should one take? The science behind the role of oxidative stress in aging and neurodegenerative disorders and the modulation of oxidative stress by nutritional antioxidants is complex and has not yielded many confident therapeutic recommendations. Pros and cons shall be discussed

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HERBAL & ALLOPATHIC DRUG INTERACTIONS: IS IT TIME TO WAKE UP?

C. S. Gautam
Professor, Dept. of Pharmacology GMCH-32, Chandigarh

Plants have been used for medicinal purposes for thousands of years, in each society, culture and country. Anything and everything from the nature is considered safe, and useful. Hippocrates documented the use of St. John's wort for mood ailments in 5-6th century. Qinghaosu a Chinese herb have given society Astermisinin and arte ether drugs for *P. falciparum* resistant strains of malaria and also a main stay drug for chloroquine resistant and cerebral malaria Maa-Huang another Chinese herb has given us ephedrine which is a non-catecholamine and was used for bronchial asthma. Cranberry is used for long term management and prevention for recurrent urinary tract infections. Primrose oil is recommended for atopic dermatitis (eczema) and also in post menopausal women for hot flashes. Vinca alkaloids i.e. Vincristine and Vinblastine are anticancer drugs Asprin and quinine cannot be forgotten, are too from plants only. In America only, every 3rd person is on alternative or complimentary medicine. However, the threat in modern world today both in developed and developing nations is that the patient community on one side is consuming allopathic drugs for their respective diseases and on other side continuing on their own with Herbal drugs without disclosing it to their allopathic physicians leading to the serious drug interactions which could be agonistic, antagonistic or neutral in nature. Therefore, it is desirable on ethical grounds to curb this practice with proper education to patient's community. Both doctors and patients should be cautious while using the medicines from two systems concomitantly especially in pregnant or likely to be pregnant, lactating mothers, children/infants, drug addicts, elderly patients or patients to undergo surgery are at greater risk with this type of misadventure shall be discussing in detail with few cases reported in our hospital

PLATELET ACTIVATING FACTOR RECEPTOR ANTAGONIST(S) FROM *TYLOPHORA ASTHMATICA*

Chaithra V H [1], Jeffery B Travers[2], Ravi P Sahu[2] and Gopal Marathe K[1&3*]
Department of Studies in Biochemistry, Manasagangothri, University of Mysore Mysuru-570006.
Dept. of Phramacology and Toxicology, Boonshoft School of Medicine, Wright State University, Dayton, OH, United States of America.
Department of Studies in Molecular Biology, Manasagangothri, University of Mysore Mysuru-570006.

Platelet activating factor (PAF: 1-O-alkyl-2-acetyl *sn*-glycero-3-phosphocholine) is one of the most potent pro-inflammatory phospholipid mediator of inflammation. Many cell types are known to make and respond to PAF upon appropriate stimulation. Pro-inflammatory responses of PAF include neutrophil adhesion, platelet aggregation, and cytokine production. PAF does this by stimulating a single specific G-protein coupled receptor known as PAF receptor (PAF-R). Dysregulated PAF

signaling plays a critical role in many inflammatory conditions such as ischemic bowel, myocardial and brain injury and septic shock. One of the strategies to block the inappropriate PAF-R signaling is by using effective PAF-R antagonists. Although, many antagonists for PAF-R are available and exhibit benefits in animal models, they failed to show clinical efficacy among humans. Therefore, more effective PAF-R antagonists are needed. *Tylophora asthmatica* is extensively used in folk medicine to treat inflammatory conditions like asthma, dermatitis and other related inflammatory disorders. In this study, we show that root extract of *T asthmatica* display novel PAF-R antagonistic activity against PAF-mediated events. Root extract protected the animals from PAF - induced sudden death and inhibited PAF mediated human platelet aggregation and PMN adhesion. These aspects will be presented during the symposium.

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SILYMARIN AND SILIBININ – OUR INVESTIGATIONS ON HEPATOPROTECTIVE AND ANTIOXIDANT PRINCIPLES AGAINST DRUGS AND CHEMICALS INDUCED TOXIC INSULTS OF LIVER

S. Karthikeyan
Professor & Head (Retd.), Dept. of Pharmacology and Environmental Toxicology
Dr. ALM P.G. Institute of Basic Medical Sciences, University of Madras
Taramani Campus, Chennai-113. (General Secretary, IABMS)
Karthi48y@yahoo.co.in

Liver toxicity induced by drugs and chemicals is a major problem and it affects human health drastically, and also produces high incidences of mortality. Overcoming or curing the liver toxicity is challenging issue as the therapy for this adversity is dependent on the agent that induce the toxic effect in liver and general health status of the affected individual. In our laboratory, we have induced liver toxicity in experimental animals using various drugs like isoniazid, rifampicin, pyrazinamide, lamivudine, zidovudine, methotrexate, carbamazepine and chemicals such as carbon tetrachloride, dimethyl nitrosamine, diethylenitrosamine and various nitrosamines and evaluated the hepatoprotective and antioxidant properties of silymarine and silibinin, which are active principles extracted from the medicinal plant *Silybummarianum*, conventionally called milk thistle. Both these hepatoprotective agents exhibited excellent hepatoprotective, antioxidant, membrane stabilizing and free radical scavenging potentials against the above drugs and chemicals induced hepatotoxicity in rats. We investigated the biochemical, molecular and cell signalling pathways to understand the role of these principles in mitigating the toxic insults of liver. We also investigated the gene and protein expression profiles in order understand their molecular mechanisms of action. Interestingly, these agents act in different pathways towards suppression of hepatitis, inflammatory reactions of liver, hepatic steatosis and fibrosis with respect to mitigation of hepatotoxicity induced by the above drugs and chemicals. In this presentation, we share our experimental investigations with respect to selected drugs alone in order to define the role of these hepatoprotective principles. As extension of study, we also investigated the use of polysomal preparation of silybinin and silymarin as phosphatidylcholine complexes and we observed that these complexes were very effective in hepatoprotection. Our experimental studies, pertinent to anti-tubercular, anti-retroviral drugs and ethanol-induced liver toxicity and the role of silybinin and silymarin and their complex with phosphatidyl choline are focused in this presentation.

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***IN VITRO* MODE OF ACTION OF INDIAN SAW-SCALED VIPER AND COBRA VENOMS ON NEUTROPHILS; AN EMPHASIS ON NETOSIS**

K. Kemparaju, B Swethakumar, and K S Girish
Professor & Chairman, Department of Studies in Biochemistry
University of Mysore Mysuru 570 006.
kemparaj@biochemistry.uni-mysore.ac.in

Neutrophils are the most abundant granular and as well as phagocytic cells of the innate immunity. They are named after their multilobed nucleus as polymorphonuclear leukocytes (PMNLs). The mature neutrophils are loaded with varied types of granules embedding antimicrobial, and cytotoxic agents. Neutrophils being short-lived cells, they are the significantcontributors of acute inflammatory

response as they are quickly recruited and get flocked at the inflamed site. They respond through mechanisms such as phagocytosis, degranulation, NETosis, and secretion of pro-inflammatory cytokines. NETosis is a process of ejection of de-condensed chromatin/DNA fibers, the NETs (Neutrophils Extracellular Traps) decorated with antimicrobial, and cytotoxic agents. Recent studies have described early/rapid/vital NETosis that takes 5 to 60 min, and delayed/suicidal NETosis that takes 2 to 4 hr. The mechanism of NETosis has been found to be associated with numerous viral, bacterial, and fungal infections and as well as with several lifestyle disorders such as diabetes, autoimmunity, cardiovascular disorders, neurodegenerative disorders, and cancer. Interestingly, the results from our laboratory demonstrate the varied actions of snake venoms on neutrophils resulting in ifferential molecular mechanisms of NETosis. Thus, the unwinding of precise molecular mechanisms underlying snake venoms induced vital and suicidal NETosis is challenging and exciting.

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NOBLE METAL NANOSTRUCTURES FOR BIOLOGICAL APPLICATIONS

Manjunatha Pattabi
Professor& Chairman, Department of Materials Science
Mangalore University
Mangalagangothri 574199 INDIA
manjupattabi@yahoo.com

This talk covers some of the exciting applications of noble metal nanoparticles in biological and biomedical realm. Nanoparticles of various types of materials have potential for different biological applications. The antibacterial applications of silver nanoparticles has been studied extensively and used in certain applications too. Silver nanoparticles have shown good activity against HIV virus and the mechanism is fairly well understood. The anisotropic gold nanostructures like nanotriangles, nanorods exhibit two surface plasmon resonance (SPR), one longitudinal and the other transverse. The longitudinal Plasmon resonance wavelength can be pushed to near infrared (IR) region through appropriate tailoring of the nanostructure. This effect can be used for the destruction of cancer cells by hyperthermia. The gold nanostructures provide improved contrast in cell imaging protocols. The porous nanostructures give enhanced contrast in cell imaging. While porous platinum nanoparticles give better contrast compared to gold nanostructures, due to cytotoxicity gold may be preferred. The porous gold nanostructures have been shown to be not only effective in enhancing the contrast in the imaging of fixed cells using propidium iodide (PI), but also useful in the imaging of live cells using PI. Live cells do not allow the passage of PI through the cell wall. However, the porous nanostructures facilitate the passage of PI through the live cells as the PI is encapsulated by the porous nanostructures. This property of the porous nanostructures can be used as a very good strategy for the drug delivery to the areas which are inaccessible to the drugs, like brain. The passage of drugs through the blood brain barrier using porous nanostructures can be an exciting area.

GARLIC (*ALLIUM SATIVUM*)-THE BEST PHYTOMEDICINE

G. Rajagopal
Formerly: Professor of Biochemistry, Rajah Muthiah Medical College
Annamalai University, Annamalainagar-608002
grajagopal80@yahoo.com

Garlic is a plant in the *Allium* (Onion) family. The entire head of garlic is called ‗garlic bulb. Each segment of the bulb is known as the garlic clove. There are 15-20 cloves in each bulb of garlic.Garlic has been known as a phytomedicine for over 5000 years. Hippocrates, the father of modern (western) medicine has prescribed garlic to treat a variety of medical conditions. Garlic has been used throughout the world as a spice in food due to its pungent flavour. Currently, garlic bread is made in bakeries. Fresh garlic provides, from the nutrition point of view, the minerals-manganese, selenium, iron, phosphorus, calcium, copper, and potassium; vitamins-thiamine, pyridoxine, vitamin C; fibre; carbohydrates and proteins. The active principle of garlic is ―Allicin. The essential therapeutic functions of garlic are due to allicin. A consumption of 4-5 fresh garlic cloves per day is recommended by WHO. The major functions of allicin are: lowering of blood pressure in hypertensive people, lowering of blood cholesterol in hypercholesterolemia, lowering of blood glucose in patients with diabetes mellitus Lowers serum triacyl glycerol level in patients with

hypertriacylglyceridemia, providing antioxidants, boosting function of immune system, Protection from heavy metal toxicity, control of cancer of oesophagus, stomach, colon, pancreas, breast, Anti-inflammatory function, Inhibits *H. pylori* which is a bacterium in the stomach that is difficult to eliminate, Fights viruses, bacteria, parasites, yeast and fungiThe benefits are essentially due to consumption of raw garlic. Its anti-inflammatory property helps in reducing Arthritis pain. Garlic is a vasodilator. Bronchial asthma, and respiratory infections are controlled by ingestion of garlic. Garlic boosts immunity and controls common cold and cough. Its antifungal properties are made use of in treating fungal infections of skin. Garlic can slow down the development of cancer especially of the digestive system and lungs. Diallyl disulphide, another component of garlic prevents damage to cartilage. The antioxidant property of garlic is provided by four of its sulphur compounds - 1) Alliin 2) Allyl cysteine 3) Allyl disulphide and 4) Allicin. Alliin scavenged superoxide radicals, allyl cysteine and allyl disulphide scavenged hydroxyl radicals, allyl disulphide terminates lipid peroxidation, and allicin suppressed the formation of superoxide. In mammalian cancer cells, allicin induces cell death and inhibits cell proliferation.Freshly crushed garlic cloves show antifungal activity particularly against *Candida albicans.* Antiparasitic activity of human protozoan parasites such as *Entamoeba histolytica and Giardia lamblia.* Antiviral activity Garlic oil has been shown to effective against two bacteria, *Staphylococcus aureus and Salmonella enteritidis* and three fungi, *Aspergillus niger, Penicillium cyclopium and Fusarium oxysporum.*

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LECTINS FROM MEDICINAL PLANTS AND FUNGI; AS POSSIBLE CANCER DIAGNOSTIC AND THERAPEUTIC AGENTS

Shashikala R. Inamdar
Professor, Department of Studies in Biochemistry, Karnatak University
Dharwad-580003, India
srinamdar2009@gmail.com

Alternative medicines are gaining popularity in recent years to treat any disease including cancer. In this context identifying the bioactive molecules such as lectins from medicinal plants or fungi is encouraging to explore their possible clinical application. Lectins are the structurally diverse proteins which bind to specific carbohydrate moieties, whether free in solution or on cell surfaces without altering covalent structure of any glycosyl ligand. Although lectins were discovered first in plants, later found to be ubiquitous in their occurrence. Unique carbohydrate binding properties of lectins, irrespective of their source, have been exploited for their applications in diverse fields including cancer research, in diagnostics, therapeutics and also as drug delivery system. Alterations in epithelial cell surface glycosylation are common in cancerous and pre-cancerous tissues which have been targeted for early detection, therapy or drug delivery. One of the most common glycosylation changes in epithelial cancers is increased core fucosylation, increased expression of cancer associated antigens such as oncofetal TF antigen, CA 125 and their altered forms, whose expression is correlated with tumor progression and cancer metastasis. Lectins or antibodies, which bind to such cancer associated antigens or altered glycans, are known to have greater applications in cancer research both in diagnostics & therapeutics. The major research interests of Glycobiology laboratory of Karnatak University is focused on understanding the structure function relationship of plant and fungal lectins with unique sugar specificity. The lectins are being studied for various clinical and agricultural applications. In recent years, monocot mannose-binding lectins are gaining much interest because of their exclusive specificity towards high mannose N-glycans and applications. *Remusatia vivipara* is an epiphyte and its edible tubers are traditionally used as folk medicine for treating inflammation and arthritis. *Dioscorea bulbifera* or air potato is another medicinal plant that has been used as a folk remedy to treat cancer. A lectin from bulbils of *Dioscorea bulbifera,* DBL and another from tubers of *Remusatia vivipara,* RVL both have been purified by affinity chromatogarhy and characterized. RVL and DBL have affinity for high mannose N-linked glycans including glycoprotein gp120 of HIV envelope and are being studied for their clinical potential in cancer and HIV research. Two lectins from plant pathogenic fungi; *Sclerotium rolfsii* (SRL), *Rhizoctonia bataticola* (RBL) and another from human pathogen, *Cephalosporium* (CSL) have their sugar specificity directed respectively towards TF and CA125 antigens, their altered forms and core fucosylated glycans. Both SRL and RBL are developmentally regulated lectins involved in the development & morphogenesis of the fungi where as CSL has a role in causing fungal keratitis. TF antigen binding properties of SRL has been explored to study its interaction and physiological response in human colon, breast and ovarian epithelial cancer cells. SRL has growth inhibitory effect on human colon, ovarian and breast cancer cells,

whereas, no effect on non tumorigenic MCF-10A and Human Mammary Epithelial Cells [HMEC's] demonstrating its clinical potential. SRL inhibited cancer cells growth by inducing cellular apoptosis by the involving both intrinsic and extrinsic pathways. SRL activates multiple signaling pathways in HT29 cells including cellular apoptosis. Preclinical studies of SRL with human colon HT 29 and breast MCF7 xenografts in NOD SCID mice has revealed its tumor suppressing effect when injected either intratumorally or intraperitoneally without any toxicity demonstrating clinical potential of SRL. RBLrecognizes complex N linked glycans, shows strong binding to ovarian cancer tissues and cytotoxic effect on ovarian and colon cells supporting the possible application of RBL in ovarian and colon cancer diagnostics & its therapeutics. CSL has specific affinity towards the core fucosylated N-glycans expressed on glycoproteins such as alpha fetoprotein, which are cancer specific markers and hence CSL has possible clinical application in diagnostics. All the three lectins, SRL, RBL and CSL showed no or very weak binding to normal human colon tissues but strong binding to cancerous and metastatic tissues and hence have diagnostic potential. As, these lectins have selective toxicity on cancer cells, have promising potential to be developed as therapeutic agents and also as targeted drug delivery system. The current research in our laboratory is aimed to explore pharmacological applications of all these lectins either or both as diagnostic probes and therapeutic agents and also as possible targeted cancer drug delivery system.

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ALTERED ERYTHROCYTE TOPOGRAPHY BY SURFACE NANOSCOPY AND METABOLIC STRESS RESPONSES OF FEMALE LABOURERS OF WEST BENGAL DURING MANUAL MATERIAL HANDLING

Subrata Ghosh[1*], Sugata Das[2] Titlee Majumdar[3] & Anandi Bagchi[4] *[1,2,3]*
Department of Physiology, Hooghly Mohsin College Chinsurah 712101, WB
[4]Department of Physiology, Jhargram Raj College Girls" Wing, Jhargram

Strenous physical exercise like professional load bearing often produces oxidative stress, increasing post exercise Malondialdehyde (MDA) levels. To quantify the cellular dimension/profile of the said stress, nanoscopic observation of the erythrocyte surface was made by Atomic Forced Microscopy (AFM)/Lateral Forced Microscopy (LFM) and correspondingly the average roughness of the surface was measured. An attempt has been made to correlate the antioxidant vitamin mixture supplementation, endurance capacity, allied physiological parameters and blood glucose-6- phosphate dehydrogenase (G-6-PD) level and roughness-MDA correlation and thereby the deduced regression equation as crucial markers of performance related oxidative stress management in professional female load bearers. Three experimental groups A, B and placebo, each consisting of ten female workers (18-21 years old), were chosen. Group A was given 400 mg of vitamin E supplementation daily, while Group B was given a clinical mixture of vitamin E, vitamin C and β-carotene daily in capsular form for a period of 28 days. The exercise- induced hike in the status of serum MDA was found to rise less significantly with vitamin supplementation. Further study showed that the supplementation was instrumental in reducing the basal MDA level. Endurance capacity, determined by bicycle ergometric method, was increased more significantly ($p<0.001$) in group B than in group A ($p<0.01$), and first minute recovery heart rate decreased significantly ($p<0.05$) in both groups. G-6-PD level was shown to increase more significantly ($p<0.01$) with antioxidant vitamin mixture supplementation than with vitamin E supplementation singly ($p<0.05$) in professional female load bearers. The regression equations emerged, might be instrumental in early detection of oxidative damage in strenuous exercise in manual material handling.

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CELASTROL MODULATES INFLAMMATION THROUGH INHIBITION OF THE CATALYTIC ACTIVITY OF MEDIATORS OF ARACHIDONIC ACID PATHWAY

B. S. Vishwanath
Professor, Department of Studies in Biochemistry, University of Mysore
Manasagangotri, Mysuru – 570 006
vishmy@biochemistry.uni-mysore.ac.in

Plant derived compounds are an important resource to identify novel and effective anti-inflammatory agents. Using molecular docking approach, we have screened several phytochemicals and predicted that celastrol, a quinone methide triterpene, can effectively modulate the AA pathway. Celastrol has been studied extensively for its cellular and molecular mechanisms of anti-inflammatory activity,

which include modulation of the balance between pro- and anti-inflammatory immune cell types, inhibition of the expression of pro-inflammatory cytokines and chemokines, modulation of transcription factors and regulation of intricate cell signaling pathways. However, its action on the eicosanoids pathway is not studied. Elevated production of arachidonic acid (AA)-derived pro-inflammatory eicosanoids due to the concerted action of secretory phospholipase A2 group IIA (sPLA2IIA), 5-lipoxygenase (5-LOX) and cyclooxygenase-2 (COX-2) is a common feature of many inflammatory disorders. Hence, modulation of the bioactivity of these 3 enzymes is an important strategy to control inflammation. However, the failure of drugs specific for an individual enzyme (sPLA2IIA-, 5-LOX- or COX-2) and the success of 5-LOX/COX-2 dual inhibitors in effectively controlling inflammation in clinical trials prompted us to evaluate a common inhibitor for sPLA2IIA, 5-LOX and COX-2 enzymes. We provide the first evidence for celastrol's ability to inhibit the catalytic activity of sPLA2IIA, 5-LOX and COX-2 enzymes. Celastrol significantly inhibited the catalytic activity of sPLA2IIA (IC50 = 6 µM) in vitro, which is independent of substrate and calcium concentration. In addition, celastrol inhibited the catalytic activities of 5-LOX (IC50 = 5 µM) and COX-2 (IC50 = 20 µM) in vitro; sPLA2IIA-induced edema and carrageenan-induced edema in mice; and lipopolysaccharide-stimulated production of PGE2 in human neutrophils. Thus, celastrol modulates inflammatory responses by targeting multiple enzymes of AA pathway.

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WHOLE GENOME SEQUENCING FOR BETTER UNDERSTANDINGTHE TRUE BURDEN, EVOLUTION AND POTENTIAL CONTROL OF AMR Dr. Ankur Mutreja

Senior University Lecturer, Faculty (Global Health- Infectious Diseases) Department of Medicine, University of Cambridge Cambridge, United Kingdom

am872@medschl.cam.ac.uk

Antimicrobial resistance (AMR), especially antibacterial resistance (ABR) is a huge threat to a rapidly developing country like India. With dense population and huge hospital patient load, the transmission and spread of pathogens is difficult to control. In addition, the transmission of AMR through hop on hop off genes between bacteria in the environment and pathogen-commensal gene pool exchange during under stress conditions is inevitable. The acquisition of AMR cassettes makes many of these bacteria fitter for survival both in the environment and in host. These super fit pathogens replace the their less fit counterparts and clonally expand in waves. These waves lead to development of lineages of bacteria that are more resistant than the other lineages that are on the verge of extinction. My presentation will use various examples from high resolution whole genome sequence data on *Vibrio cholerae*, *Shigella sonnei*, Enterotoxigenic *E. coli* (ETEC) and *Salmonella* Typhi to shed light on the ticking AMR bomb and discuss various interventional strategies that could be used stop .

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JOURNEY OF BIOSIMILAR FROM BENCH TO BEDSIDE

Anjali Apte-Deshpande

Founder/Director Central Dogma Pvt Ltd

anjali@centraldogma.co.in

Bipharmaceuticals are large and structurally complex molecules and are typically derived from living cells. Biopharmaceuticals include wide range of products lik recombinant therapeutic proteins, vaccines, monoclonal antibodies and fusion proteins. These are synthesized using rDNA technology. Being proteins, they are highly sensitive to environmental conditions and pose a challenge in their production using cell-based system. Biosimilars are new versions of innovator biopharmaceutical products which are marketed after their patent expiration. In last few years, India has seen significant growth in its Biosimilar portfolio. Biosimilars are developed through sequential processes and are systematically engineered to match the innovator product. Each step of biosimilar production is intricate, sensitive and often specific for the particular product which requires specialized skills and expertise. Even minor alterations in the process can lead to the changes in cell behavior which in turn causes the changes in structure, stability or quality of the product and can eventually affect its comparability to innovator product. Due to the complex nature of biosimilar products, the regulatory

requirements for their commercialization are very stringent. Regulatory bodies demand comprehensive characterization of the products and comparability data with innovator product using state-of-the art analytical methods. The regulatory bodies of India and other countries have set comprehensive guidelines for development, manufacturing and characterization of biosimilars /biopharmaceuticals. My presentation will give an overview of the entire path a biosimilar follows from it's development in R & D till it reaches patient. It will touch base upon role of all key departments in biopharma industry and will highlight their importance in the journey of biosimilar development.

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BIOMARKERS – IN HEALTH AND DISEASE

K. Ashok Prabhu
Associate Professor, Department of Biochemistry, Kasturba Medical College
Manipal (Deemed to be) University, Mangalore
Clinbiolabsmlr01@gmail.com

There is a constant challenge to better and approachable health needs of the community in our country. Along with medical fraternity, the medical testing laboratory plays a pivotal role in this direction with respect to the wide range of test menus and their accuracy and precision in reporting. Biomarkers in human body have been the target to identify and manage many health-related issues across the globe. They have been used to screen populations for prevention, diagnosis and prognosis. A number of biomarkers, which are organ specific as well as disease specific, that can be tested in human biological samples, are now available and correct use and interpretation of these helps a practising consultant to come to a clinical judgement. Promising biomarkers have been identified in recent years that provide increased required specificity and prognostic information. With advancement in Omics field, Pharmacogenomics in turn holds potential to preselect susceptible populations based on biomarkers and tailor a drug therapy. Biomarkers can uncover new mechanisms of drug-induced pathophysiology which, have led to promising mechanism-based therapeutic interventions. However, such biomarkers have to be formally qualified and then put to routine clinical use. With the development of inventive clinical trials, these novel biomarkers could add substantial value to the current armoury and change the management of susceptible populations in the near future and improve patient safety. In this talk an attempt is made to understand the role of organ specific biomarkers in screening populations for potential disease/s and how the same can be made use of in diagnosis and prognosis thus finally to have a healthy community.

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LEAD EXPOSURE AND BONE HEALTH.

Bhagwat. V
Professor & Head, Dept of Biochemistry,
S.B.H. Govt Medical College, DHULE - 424002 Maharashtra
bhagwatvr@gmail.com

Lead is very useful metal with wide range of industrial applications. However, lead has no known biological role in living organisms. Increasing industrial use of lead metal resulted in parallel increase in pollution of environment, ultimately jeopardizing human health in general. In present day of life, lead exposure is inevitable. The non-occupational or domestic environment cause low level of exposure while occupational exposure to industrial workers results in significant Pb intoxication or Plumbism.Lead can cause myriad range of biological effects depending on the level and duration of exposure. Effects at sub-cellular level as well as effects on the overall functioning of the body are observed. Lead affects almost all organs and systems and also acts as mutagenic and carcinogenic agent. Haematopoietic, skeletal, nervous, renal and reproductive systems are the most vulnerable targets. The skeleton is the major site for lead accumulation. It is responsible for the largest fraction of the total body burden of lead. The bones and teeth of adults contain about 70-95% of their total lead body burden. Lead in mineralizing tissues is not uniformly distributed. It tends to accumulate in bone regions undergoing the most active calcification at the time of exposure. The metabolism of lead in bone parallels that of calcium and the resorption of calcium in osteoporosis is accompanied by

passage of lead from bone into blood. Lead accumulation occurs predominately in trabecular bone during childhood, and in both cortical and trabecular bone in adulthood. Two physiological compartments appear to exist for lead in cortical and trabecular bone. The inert component stores lead for decades and the labile component readily exchanges bone lead with the blood. Bone-to-blood lead mobilization increases during variety of patho-physiological states such as periods of pregnancy, lactation, menopause, physiologic stress, chronic disease, hyperthyroidism, kidney disease, broken bones, and advanced age, all which are exacerbated by calcium deficiency. Consequently, the normally inert pool poses a special risk because it is a potential endogenous source of lead that can maintain blood lead level long after exposure has ended. To fully understand bone as a target tissue of lead toxicity, as well as a reservoir of systemic lead, it is necessary to define the effects of lead on the cellular components of bone. Lead exposure directly and indirectly alters many aspects of bone cell function. It affects circulating hormones levels especially calcitriol, hormonal regulation of bone cell function, affects functional coupling of bone cells, affects metabolism in bone cells, disturbs calcium messenger system resulting loss of physiological regulation. The effects of lead on the recruitment and differentiation of bone cells remains to be established. The storage of lead in bone can remain for more than 25 years. Due to the very long half life of bone lead, past exposures accumulate lead in the bones which serves as endogenous source. The symptoms or adverse health effects can also appear in the absence of significant current exposure. However, long-term effects of low-level exposure in adults remain unclear. It is important that primary care physicians must evaluate a patient with potential lead poisoning, examine potential current and past lead exposures and look for other factors that affect the bio-kinetics of lead.

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ENDOPHYTES OF TRADITIONAL MEDICINAL PLANTS – A NEW SOURCE OF NOVEL MEDICINE

Chandrashekhar G. Joshi
Department of Studies in Biochemistry, Mangalore University, Jnana Kaveri
Chikka Aluvara Kodagu, Karnataka, India-571232.
josheejoshee@gmail.com

Endophytes are the microorganisms that are symbiotically associated with the plants. These organisms are thought to be present in each and every plant on earth. There are divergent views on the medicinal property of the enodphytic fungi. According some researchers, these microbes become heir to the secondary metabolites synthesized by the host plant while others have the opinion that these endophytes are contributing to the medicinal property of the host plant in exchange of shelter. Although there are several millions of endophytes exist in nature, very few have been systematically studied. Of late, diverse endophytic interactions could be understood with the aid of transcriptomics; proteomics; metabolomics; next-generation sequencing (NGS) technologies; bioinformatics etc. However, we are still in the dark about the medicinal values of endophytic fungi. So, the aim of the present study was to isolate the endophytic fungi from terrestrial and marine medicinal plants and to study their biological activities. We have isolated five endophytic fungi from terrestrial medicinal plants and three from marine alga. These endophytes were identified using 18rDNA sequence analysis and the ethyl acetate extracts of these microorganisms were subjected various activities such as antioxidant, antimicrobial as well antiangiogenic activities. All theendophytic extracts showed potential biological activities as well as the presence of various secondary metabolites. Even we were able to prove the mechanism of antimicrobial and antiangiogenic activity of selected endophytic fungi.We have reported for the first time about the potential antioxidant and antiangiogenic activity of ethyl extracts of these microbes. Studies are going on in our lab to understand the molecular mechanism underlying the medicinal properties of theseendophytic fungi.

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Plants, Tribals and Molecules

Chandrashekar K R
Professor, Department of Applied Botany
Mangalore University, Mangalagangotri -574199
profkrchandrashekar@gmail.com

It is estimated that 70 – 80% of people worldwide relay chiefly on traditional, largely herbal, medicine to meet the primary healthcare needs. The global demand for herbal care not only large, but growing rapidly. The market for Ayurvedic medicines is estimated to be expanding at 20% annually in India, while the quantity of medicinal plants obtained from just one province of China has grown by 10 times in the last ten years. Herbal medicine is becoming ever more fashionable in richer countries, a market sector which has grown at 10 - 40% annually in Europe and North America over recent years. Plants have contributed hugely to Western medicine, through providing ingredients for drugs or having played central roles in the drug discovery. Some drugs, having botanical origins, are still extracted directly from plants, others are made through transformation of chemicals found within, while yet others are today synthesised from inorganic materials, but have their historical origins in the active compounds found in the plants. There are undoubtedly many more secrets still hidden in the world of plants. India, being a biodiversity rich country, considered to be a mega biodiversity country with four Hot Spots, is the land for a large number of plants, of which, many of them have been reported to be medicinal and many more to be explored for their therapeutic /nutritional values. Approximately more than 90% of the people in India are dependent on plants for their immediate health needs. This tribal knowledge of using the plants for their basic health needs is the storehouse of information for future research in India. This knowledge could be harnessed effectively in the development of plant-based drugs. Traditional knowledge-driven drug development can follow a reverse pharmacology path and reduce time and cost of development of a new drug. Traditional knowledge is expected to serve as a powerful search engine and most importantly, will greatly facilitate intentional, focussed and safe natural products research to rediscover the drug discovery process. Combining the strengths of the knowledge base of traditional systems of medicine with the dramatic power of high throughput screening (HTS) will definitely help in the generation of structure – activity libraries. Traditional knowledge and experiential database will provide new functional leads to reduce time, money and toxicity –the three main hurdles in the drug development

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CHRONO-NUTRITION: AN EMERGING ASPECT OF NUTRITIONAL ASSESSMENT

Koumi Dutta*1, Bibaswan Basu***** Devashish Sen*
*****Ergonomics, Work Physiology and Occupational Health Management Laboratory Department of Life Sciences, Presidency University, Kolkata, India *1 Ergonomicsand Occupational Physiology Laboratory, Department of Physiology University of Kalyani, Nadia, India
dsen.dbs@presiuniv.ac.in

The propensity of an individual to align physiological, behavioural activities temporally is known as chronotype. Chronotype can be broadly classified into morning type, intermediate type and evening type. Chronotype of an individual gains' expression during the juncture of childhood and adulthood, precisely adolescence. Adolescence is also a pivotal phase of life with respect to growth and maturity. Dietary intake during adolescence has been assessed in terms of quantity and quality to comprehend its effect on growth. The time of food intake is another important aspect to consider. Temporal feeding patterns are often observed to be governed by chronotype. Due to undulation in the amount of secretion of digestive hormones throughout the day the timing of the meal has profound impact. The advent of technologyin developing countries like Indiahas resulted in alteration of sleep wakefulness cycle and transformation in the expression of chrono type. It has been observed that generally evening type individuals either tend to skip breakfast or consume significantly less calories than their other counterparts. Eating disorders like Night Eating Syndrome and Binge Eating Syndrome is being increasingly observed. Chrono-nutrition is a vital area to delve into, in order to mitigate the burning issue of malnutrition.

BERBERINE MITIGATES HIGH GLUCOSE-POTENTIATED PLATELET AGGREGATION AND APOPTOSIS BY MODULATING ALDOSE REDUCTASE AND NADPH OXIDASE ACTIVITY

Kesturu S. Girish
Professor & Chairman, DOSR in Biochemistry, Tumkur University, Tumkur
Karnataka
ksgbaboo@gmail.com

Diabetes mellitus (DM) is a serious metabolic disorder affecting millions of people worldwide. The high rate of mortality and morbidity during DM is attributed to the increased atherothrombotic events due to platelet activation and apoptosis leading to macro and microvascular occlusions. The platelet hyper-reactivity and apoptosis during DM is accounted for the accumulated reactive oxygen species (ROS) due to increased aldose reductase (AR) and NADPH oxidase (NOX) activities. Considering aspirin insensitivity in DM patients, new therapies targeting the underlying mechanism is urgently warranted. Berberine, a benzylisoquinoline alkaloids, from Chinese folk medicine has been demonstrated with several anti-diabetic effects. Therefore, we evaluated whether berberine inhibits high glucose potentiated platelet aggregation, apoptosis and further evaluated the mechanism of its action in platelets. Berberine was found to inhibit platelet aggregation, superoxide production via modulating AR, NOX, and glutathione reductase activities in high glucose (HG) treated platelets. Correlated with this, berberine inhibited, calcium release, ERK activation, α- and dense granule release and platelet adhesive properties. In addition, berberine inhibited p38-p53 mediated BAX activation, mitochondrial dysfunction and platelet apoptosis induced by HG. The platelet protective effect of berberine by inhibiting AR and NOX in high glucose-treated platelets suggest that berberine could be developed as a potential therapeutic molecule in the treating pathologies associated with DM.

BIRTH DEFECTS- ITS PREVENTION AND MANAGEMENT

Gurjit Kaur
Department of Physiology, Govt. Medical College, Chattisgarh
Gurjitkaur123@rediffmail.com

Genes are very powerful when it comes to birth of a child. Genetic disorders are a growing problem, especially due to inadequate diagnostic, management and rehabilitation facilities, moreover the burden of these disorders is greater in developing countries than in developed countries. ―Congenital‖ means present from the birth and ―Anomaly‖ means something that is different from normal. Sometimes babies are born with birth defects which are also called congenital defects. Earlier according to WHO only structural defects were considered as congenital anomaly but in 2012 WHO also included functional abnormalities in congenital anomalies. Birth defects are present at birth but may manifest at any age. Presently worldwide emphasis is given on prevention of birth defects and various screening programs are adopted in the healthcare system of developed countries. Some of these programs viz Newborn screening program (NBS), Prenatal screening program (PNS), carrier screening and pre-conceptional counselling which are of utmost important in the prevention of these congenital malformation from the population. There unquestioned success makes them an excellent example of the superiority of the prevention based compared to traditional treatment-based management. Fortunately, the new medical technologies provide methods for the prenatal diagnosis of these disorders thus preventing birth defects and reducing the burden on the family and the society. These genetic technologies are extremely cost effective when weighed against the cost of treatment of affected children lasting many years. Both NBS and prenatal screening program are on-going in Government Medical College and Hospital Chandigarh. Till June 2016 we screened 33,736 pregnant women for chromosomal defects and screened 53,000 newborns for congenital disorders. During this journey we have identified Down syndrome, Congenital malformation and many others commonly existing abnormalities during development of fetus and through Genetic counselling we were able to help the families to take an informed decision regarding their pregnancies. We have also identified Congenital Hypothyroidism in newborns and saved them from developing mental retardation by early intervention and management. We have identified G6PD

Deficiency in newborns and saved them from developing serious complication and threat of life by early management

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SALUBRIOUS SYNERGISTIC POTENCY OF GINGER AND GARLICIN AMELIORATING PATHOPHYSIOLOGY OF GASTRIC CANCER

Hannah R. Vasanthi

Debjani Mansingh, Deeptrup Bishwas, Shalini Pradan, Malarvilzhi R**,** Natural Product Research Laboratory, Dept. of Biotechnology, Pondicherry University Puducherry-605014

Corresponding Author. Dr A. Hannah Rachel Vasanthi**,** Professor, Dept. of Biotechnology Pondicherry University

hrvasanthi@gmail.com

Ginger and garlic are two widely used spice globally and more specifically in the Indian kitchen owing to its culinary taste and medicinal properties. Although there existnumerous scientific papers on the role of ginger and garlic separately as potential functional foods owing to the phytochemicals they possess, we were prompted to identify the synergetic role of ginger and garlic in experimentally induced gastric cancer as ginger and garlic paste is used in the Indian kitchen in most of the dishes. A potent synergism exhibited by equal volumes of both ginger and garlic was noted in AGS cell line as evidenced by reduced cell viability. It is interesting to note that the aqueous extract of ginger and garlic in combination acted both therapeutically and prophylactically in MNU-induced gastric cancer as evidenced by the markers of oxidative stress (lipid peroxidation. catalase, superoxide dismutase, glutathione peroxidase, glutathione S-transferase and reduced glatathione), inflammation (NF-kB, TNF-α, IL-6, PGE-2) and apoptosis (Cytochrome-C, Bax, Bcl2) and histopathological changes in the stomach tissue. The traditional use of ginger and garlic paste in the Indian kitchen is worthy to be a functional food in diseases related to gastro-intestinal tract. However, further studies are warranted in the other metabolic disorders.

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NEUROTOXICITY: THE FOOD NEUROTOXINS CONTRIBUTING TO NEURODEGENERATIVE DISEASES AND POSSIBLE DIETARY SOLUTIONS

Harish Prashanth K. V.

Functional Biopolymer lab, Department of Biochemistry CSIR - Central Food Technological Research Institute Mysore 570020, Karnataka State, India

harish@cftri.res.in

Neurotoxicity presently refers to the adverse effects of chemicals /neurotoxins, which are found in processed and packaged foods as additives and also including those of natural origin. The role of neurotoxicant exposures in neurodegenerative disease has been established. Numerous neurodegenerative diseases are associated with neurodegeneration. The neurological consequences of neurodegeneration can have distressing effects on sensory, mental and physical functioning. The data on environmental influences of most cases of prevalent neurodegenerative diseases like Alzheimer's & Parkinson's diseases are still unknown. The special sensitivity of the food toxicant exposure and unifying mechanisms of neurodegeneration are in progress. Recently, we have investigated the neurological toxicity of oral acrylamide (ACR) exposure in Drosophila Melanogaster and the role of soluble molecule (LMWC) in amelioration of this toxicity. Treatment with LMWC alongside ACR ameliorates the biochemical changes, dopamine and kinesin motor protein to normal levels thereby offering complete protection against ACR induced neurotoxicity. In this talk, the role of environmental/food neurotoxicant exposures on neurodegeneration in selected major neurodegenerative diseases will be discussed.

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HISTOGENESIS OF LUMBAR SYMPATHETIC CHAIN IN HUMAN FETUS.

Kanchan kapoor*,
Jyotsna Singh**, Ramandeep Kaur***, Rupinder Singh***
*Professor, ** Assistant Professor, *** Demonstrators
Government Medical College, Chandigarh, India
kapoorkanchan@rediff.com

Introduction: The purpose of the present study is to trace the development of LST at different stages of gestation and to define the histogenesis of LSG. Methods: The LST was exposed bilaterally in 25 fetal specimens of varying gestational ages. A light microscope study was done on LSG in fetuses from each gestational age group. Observations: Presence of LST was noticed in all cases from gestational age of 12^{+} wks. Although very minute to define, it was always easy to locate it medial to Psoas Major. Light microscopic examination at 12^{th} wk of gestation showed small, rounded cells with a large heterochromatic nucleus. Cluster formation by these cells was observed in a 16^{th} wk embryo. After 18^{th} wk, sections showed cytoplasmic extensions i.e. appearance of an axon and later (at 20^{th} wk.) the formation of dendrites. After 30wk of gestation, the neuron appeared more like an adult neuron. Conclusions: The medial border of psoas major muscle is a reliable guide to trace the presence of LST. The most reliable vertebral level is taken as starting from L2 to L5. The number of ganglia in the initial stages is five which later on get reduced to 4 or 3 within the fetal period.

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MASS SPECTROMETRY BASED FUNCTIONAL PROTEOMICS TO IDENTIFY ACTIONABLE MOLECULES IN HUMAN DISEASES

T. S. Keshava Prasad, PhD
Professor and Deputy Director
Course Coordinator of Biotechnology Skill Enhancement Program (BiSEP)
Center for Systems Biology and Molecular Medicine, Yenepoya Research Centre
Yenepoya (Deemed to be University), Mangalore
keshav@ibioinformatics.org

Understanding of signaling pathways in human diseases is more important than alterations at the DNA levels. Activity of many pathways can be assessed by studying the proteome and the phosphoproteome. This is because the large majority of activated kinases can be rapidly identified owing to an increase in their autophosphorylation activity and the corresponding pathways can be determined by looking at the profile of the kinases and their substrates that are phosphorylated. To date, 11 kinase inhibitors have been approved by FDA for cancer therapy. Identification of imatinib, a small molecule inhibitor against BCR-ABL tyrosine kinase, by Druker and colleagues revolutionized the treatment of patients with CML. Other examples include erlotinib and gefitinib targeting EGFR in non-small cell lung cancer) and trastuzumab in HER2 positive breast cancer). Given the central role of protein kinases in cell signaling networks and their potential as excellent therapeutic targets, phosphoproteome profiling to identify activated kinase pathways is an ideal approach to meet this goal. However, limited effort has been made to identify potential therapeutic targets in human diseases. I will describe several ways in which mass spectrometry based functional proteomic approaches can help to discover novel biomarkers and therapeutic targets in infectious diseases and cancers.

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A SCIENTIFIC VALIDATION OF INDIGENOUS ORAL HEALTH AND HYGIENE PRACTICES

Maji jose* and Manjula Shantaram**
* Professor &Head, Dept of Oral Pathology, Yenepoya Dental College Yenepoya (deemed to be) University, Mangalore,
[2]Professor & Director I/C of PG centre, Mangalore University, PG Centre, Jnana Kaveri, Chikka Aluvara, Kodagu
majiajoyin@yahoo.co.in

In the last few decades, there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world. Although the use of medicinal plants for routine cleaning of teeth and treating various oral diseases has been a part of Indian culture for a long time,

the traditional practices predominantly followed by rural folks in Dakshina Kannada have not been well documented and the beneficial effects have not been scientifically validated. Therefore, anethno-medicinal survey was conducted which could gather information on 32 species of plant materials traditionally being used for oral health and hygiene by local inhabitants this region.In order to verify the claimed validity of traditional indigenous practices, systematic investigations of basic phytochemical constituents, antioxidant and antimicrobial activities of most common plant material used for oral health and hygiene namely mango leaves, husk of coconut and areca were carried out. Phytochemical analysis of three plant materials revealed the presence of components such as tannins, polyphenols, alkaloids, flavonoids with the total phenolic content of the tested extracts were 57.22 ±2.1, 83±0.26 and 409 ± 3.9 mg of gallic acid equivalent (GA)/g of areca husk, coconut husk, mango leaf extract respectively. Antimicrobial analysis revealed a concentration dependent inhibitory effect of mango leaves and coconut huskagainstthe cariogenic organisms studied with highest antimicrobial activity with mango leaves. Similarly, all plant materialsexhibited efficient free radical scavenging activity in the order mango leaf > coconut husk > areca husk. OH radical and super oxide radical scavenging activity and reducing power of both mango leaf and coconut husk were comparable to each other, mango leaf exhibited better NO and DPPH scavenging activity than coconut husk. In all assays performed, activity of areca husk was found to be relatively less.

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INFECTION &ANTIMICROBIAL RESISTANCE: FARM TO FORK -A GLOBAL CHALLENGE

Mamatha Ballal PhD FIMSA
Professor of Microbiology, Enteric Diseases Division- Head
Central Research Lab, Kasturba Medical College, Manipal
Mamathaballal08@gmail.com

About 60 percent of all human diseases and 75 percent of all emerging infectious diseases are zoonotic, according to the researchers. Most human infections with zoonoses come from livestock, including pigs, chickens, cattle, goats, sheep and camels. Animals can carry harmful bacteria in their intestines. These bacteria are part of the normal flora of healthy farm animals like cattle, pork, sheep, goat and chickens. Some of the pathogenic bacteria present in thefarm animals are *Salmonella, Campylobacter, E. coli, Listeria and S. aureus*. They survive inside the stomach and intestine of the food animals and they are passed out along with the faces and contaminate the surroundings, eggs, milkand the meat. Salmonella, E. coli and Campylobacter are all zoonotic bacteria that can cause food poisoning when contaminated meat, eggs and dairy products by man. Antibiotic resistance is a looming public health crisis. While once believed to be in the province of hospitals and other health-care facilities, a host of community factors are now known to promote antibiotic resistance. Community-associated resistant bacterial strains have now been implicated as the cause of many hospital-acquired infections. In food animals, antibiotics are given in the form of antibiotic growth promoters (AGP) which are defined as any medicine when administered at a low, subtherapeutic dose destroys or inhibits bacteria. They are given along with the feed to farm animals at a minimal dose on an even basis. When antibiotics are given to animals, antibiotics kill most bacteria, but the resistant bacteria survive and multiply. These pathogenic resistant bacteriacan spread to human beings through meat products, through contaminated water or soil and cooked food through contaminated surfaces. These infections can causemild illness, severe illness and may lead to death. In this scientific delivery we would be focusing on the Salmonella isolation from poultry and their antimicrobial resistance profile in order to evaluate the current knowledge on human–livestock contact patterns.

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ELECTROCHEMICAL ANALYSIS OF NIGROSINE USING CARBON PASTE ELECTRODE

Manjunatha J. G.
Dept of Chemistry, FMKMC College, Madikeri
Mangalore University Constituent College, Karnataka,
India manju1853@gmail.com

Surfactant was used to fabricate a modified electrode, as a highly sensitive voltammeric sensor and was used for the determination of Nigrosine (NG) in 0.2 M phosphate buffer solution (PBS) having pH 6.0. The resulted modified electrode shows superior electrocatalytic activity towards the oxidation of NG compare with (BCPE) in 0.2 M PBS at 6.0 pH. The electrode surfaces were characterized by Field emission scanning electron microscopy (FESEM). The effect of various experimental parameters on the voltammetric response of NG was investigated. At optimum conditions, the sensor has a linear response in the concentration range of 2×10^{-5} to 6×10^{-5} M and 7×10^{-5} to 2×10^{-4} M with the limit of detection 7.6×10^{-8} M. The modified electrode demonstrated having many advantages such as simple preparation, high sensitivity, and low detection of limit, excellent catalytic activity, and reproducibility.

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PROSPECTING OF WHOLE MUNG BEAN SEED PHYTOCHEMICALS FOR THE MANAGEMENT OF OBESITY AND TYPE II DIABETES

Manohar Shinde[1], T G Thippeswamy[1] and J lalitha[2]
[1]Department of studies and Research in Biochemistry, Tumkur University Tumakuru
[2]Department of Biochemistry, Gulbarga University, Kalaburagi
drsmanohar@gmail.com

Currently, significant size of global population including India is experiencing double burden of nutrition deficiency diseases fairly prevalent among rural and urban poor and obesity and non-communicable disease among mid-economy and affluent families (MOHFW-2017 report). The rising global prevalence of obesity may reverse recent increased life expectancy due to early onset of diabetes and CVD as theglucose intolerance and hypertension in childhood were found to be strongly associated with increased rates of premature death from endogenous causes (Franks et al., 2010). The fact that obesity, the second potentially preventable cause of disability, morbidity and mortality, unfortunately, is on the rise in western world and catching up in other parts of the world including India.In this regard, we have investigated the nutritional composition of whole mung bean seeds and their processed counterparts for their application in formulation of balanced diet and functional foods. The composition of crude protein, crude fat, crude fiber, crude ash and carbohydrates were found to be 26.45, 0.68, 33.92, 4.54 and 34.4% in whole mung bean seeds. Sprouting of seeds for 48 h resulted in decrease of starch content by 6.6% and concomitant increase of protein and fiber by 4.4 and 1.4% and a also exhibited a four-fold increase in vitamin C. The analysis of starch revealed that the mung bean seeds contained 34% amylose and 22% resistant starch and *in-vitro* and *in-vivo* (rats) amylosis revealed mung bean seeds contained slow digesting starch. The LC-MS based metabolomics investigations revealed the presence 600 different metabolites in the whole mung bean seeds of which we were able to detect 183 metabolites belonging to different class of low molecular wt. chemicals (LMCs) including reducing sugars, fructooligosaccharides, amino acids, phenolic acids, phenylpropanoids, polyphenols, flavonoids, isoflavanoidsand their glucosides, vitamins, leutein, cyanidines etc. The methanolic extracts of mung bean seeds showed significant inhibition of salivary and pancreatic amylases and feeding of whole mung bean seed-based diet to the case v/s control diabetic experimental rats revealed the management of postprandial glucose levels in experimental rats. The results of our investigations reveal that the inclusion of whole mung bean or mung bean sprouts manages obesity, tyoe II diabetes mellitus and associated diseases.

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OBSTRUCTIVE SLEEP APNEA – KNOWLEDGE, CHALLENGES AND OPPORTUNITIES

D. C. Mathangi
Department of Physiology, Chettinad Hospital & Research Institute, Chettinad Academy of Research and Education, Rajiv Gandhi Salai, Kelambakkam Kancheepuram District, Tamil Nadu 603103
dcmathangi@gmail.com

We spend a third of our life in sleeping and quality of this sleep has a major impact on all our activities. With significant change in lifestyle and increase in obesity, sleep apnea has become one of the most common sleep problems globally with its prevalence in India reported to be between 4.5 – 9.4%. Sleep fragmentation seen in OSA results in poor quality of sleep, leading to excessive daytime sleepiness. The hypopnea and apnea observed in OSA leads to myriad of biochemical changes resulting in high blood pressure, coronary artery disease, diabetes mellitus, metabolic syndrome, memory deficit, attention deficit and decreased work performance and motor vehicle accidents. Gold standard test for the detection of OSA is overnight sleep study, which is not only expensive but limited in availability as well in our country. Hence it is imperative to develop simple diagnostic tests, prognostic tools or predictor equations for use in resource limited settings. Systemic impact of OSA and its molecular basis are to be thoroughly understood. This will not only create better understanding on the role of OSA in various lifestyle related diseases among the clinicians, but also modify the treatment protocols adopted. The current fast paced society, from children to adult, are to be made aware of OSA and how simple modifications in our lifestyle can make a major change on the quality of life is need of the hour

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MANGROVE REDUCED SILVER NANO PARTICLES: AN EFFECTIVE ALTERNATIVE TO ANTIBIOTICS AGAINST UROPATHOGENS.

Sunayana Saha and Mausumi Sikdar (Nee Bhakta)
Department of Life Sciences, Presidency University, 86/1, College Street, Kolkata 700073,West Bengal, India.
mausumi.dbs@presiuniv.ac.in

Control of infections caused by multiple antibiotic resistant (MAR) pathogens is a major challenge in the current medical setup. Silver nanoparticle-based infection control is an effective measure but limited in application. Green synthesis of silver naoparticles has gained attention due to their reduced toxicity in comparison to chemically synthesized silver nanoparticles (AgNPs). Employing the unique property of the mangroves, i.e. their ability to synthesize a large number of bioactive compoundscapable of reducing silver nitrate to silver nanoparticles, this study was designed. Leaves of two selected mangrove plants, -*Avecenniaalba* and *Sonneretia apetala* were selected for green synthesizing AgNPs. The characterization of the synthesized AgNPs by Fourier Transformed Infra-Red Spectroscopy, X- Ray Diffraction pattern and Transmission Electron Microscope were done. Their application as antimicrobial agents were also explored against epidemiologically studied the second most prevalent MAR uropathogens of eastern India, -*Klebsiella pneumonia and Escherichia coli*. The antibacterial activity of the both the mangrove synthesized silver nanoparticles and their synergistic effect with some common antibiotics exhibited significant and varying amount of antibacterial activity against both the test clinical isolates. The results of this study will help in the development of alternatives to commonly used antibioticsutilizing mangrove synthesized AgNPs.

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APPLICATIONS OF MOLECULAR IMAGING IN CLINICAL MANAGEMENT OF DISEASE PROCESSES

Nand K Relan, PhD
Department of Radiology
Stony Brook University Medical Center
Stony Brook, New York USA
nand.relan@stonybrookmedicine.edu

Molecular imaging field is a new medical discipline that integrates the visualization, illustration and quantification of biological processes at cellular level. Medical molecular imaging depicts mechanisms of disease processes at cellular and at sub-cellular levels in various organs. The diagnostic radiological imaging techniques such as computed tomography (CT) and X-rays provide the structural abnormalities of the various organs but molecular imaging techniques provide the quantitative measures of physiological and metabolic alterations of the disease processes including cancers. The majority of the clinical molecular imaging techniques include optical imaging (bioluminescence imaging), magnetic resonance imaging (MRI), and nuclear imaging- via single photon emission computed tomography (SPECT)and positron emission tomography (PET). Nuclear imaging techniques use disease specific radio labelled compounds called radiopharmaceuticals that are detected with SPECT or PET and provide the physiological and functional changes. Hybrid imaging modalities in combination with CT or MRI like PET-CT or PET-MR provide both anatomical as well as physiological details of disease processes. Hybrid imaging improves the diagnostic accuracy of cancer or disease processes and provide the quantitative information. The focus of this talk will be to discuss the recent advances in molecular imaging techniques specially the hybrid imaging and their clinical applications in quantitation and early detection, treatment planning, staging and restaging of several different types of cancer.

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CHARACTERIZATION OF *LISTERIA MONOCYTOGENES* RECA PROTEIN: IMPLICATIONS IN RECOMBINATION AND IN ANTIBIOTIC RESISTANCE

K. Neelakanteshwar Patil
Senior Scientist
Department of Protein Chemistry & Technology
CSIR-Central Food Technological Research Institute (CFTRI), Mysore-570020,
INDIA knpatil@cftri.res.in

Food borne pathogen *Listeria monocytogenes* causes Listeriosis one of the most important bacterial infection worldwide with high fatality rate. The problem of antibacterial resistance in this enteric pathogen has become a serious clinical and public health concern. The functions of highly conserved bacterial recombination protein, RecA has been proved to play major role in *de novo* development and transmission of antibiotic resistant gene in microorganisms. The cells of *Listeria monocytogenes* upon exposure to DNA damaging agents shown increased *recA* gene expression by 3 to 5 folds. Attempts made to understand the biochemical functions of RecA. Accordingly, we have cloned, overexpressed and purified the *Listeria monocytogenes* RecA (LmRecA) protein near to homogeneity and compared the activities with prototype *E. coli* RecA protein *in vitro*. The purified LmRecA shown binding to circular single stranded DNA (cssDNA) and formed nucleoprotein filament. Though it binds to cssDNA but failed strand exchange activity; the hallmark feature of RecA, under classical plasmid based apprach. However notably it has shown clear the D-loop activity and readily catalyzed DNA dependent ATP hydrolysis. To our surprize LmRecA promoted strand exchange reactions when used small oligonucleotides in the reaction *in vitro*. I will discuss some of these observations during the talk.

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ASSOCIATION OF URINARY MICROBIOME WITH UROLITHIASIS: CAUSE OR CONSEQUENCE?

Rekha P. D.PhD
Yenepoya Research Centre, Yenepoya (Deemed) University, Mangalore 575018
dydirectoryrc@yenepoya.edu.in

Role of microbiome in health and diseases is being constantly unraveling giving scope for exploring their contributions in the pathogenesis of different diseases. Urolithiasis is a multifactorial disorder involving several risk factors for the pathogenesis. Healthy urinary tract was earlier considered as a sterile body niche, however, it has been now proved that it harbors a microbial community collectively known as urine microbiome (UMB). The involvement of urease positive bacteria in the struvite crystallization or the gut bacteria, *Oxalobacterformagens*in calcium oxalate stones have been well understood.Role of urine microbiome in the pathogenesis or prevention of kidney stones is not fully understood. This study describes the dysbiosis of UMB in urolithiasis. The study involved identification of UMB in different stone types and its comparison with the healthy cohort using DGGE and NGS approach. Based on the results obtained, there is no doubt that the patients with urolithiasis have modified UMB compared to the health unaffected individuals. To know whether the alterationin the UMB is a cause or consequence, a better understanding of their role in urolithiasis is needed. This could direct to elucidate the novel diagnostic and prognostic options, as well as allow personalized treatments and microbiome-targeted therapeutic interventions.

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MARINE DERIVED PHYTOCEUTICALS

K. Padmakumar
Centre for Marine Biodiversity, Department of Aquatic Biology and Fisheries,
University of Kerala, Thiruvananthapuram, Kerala, 695581
k.padmakumar@gmail.com

Indian coastline is rich in algal diversity and resources. There are about 844 species of seaweeds have been reported. Since ancient times, marine algae have been used as a source of food, feed, fertilizer, in traditional medicine, and also considered as economically important phycocolloids. Investigations on the biological activities of marine algae have revealed wide ranging health-promoting effects, including antibacterial, antifungal, antiviral, anticancer, anticoagulant, Antiacne, antioxidant, antiallergic, antiosteoporosis, antiinflammatory, antidiabetic, anti-obesity, antiwrinkling, photoprotection, neuroprotective, and Skin whitening effects. Marine algae are also equally rich in essential amino acids, brominated phenols, brominated oxygen heterocyclics, nitrogen heterocyclics, kainic acids, omega-3 fatty acids, guanidine derivatives, phenazine derivatives, prostaglandins, sterols, sulfated polysaccharides, vitamins and minerals. There has been a combined effort among biologists, biochemists, food technologists, and nutritionists to explore and utilize varying plant resources of marine origin to cater the demand from the consumers for phytal remedies.

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DLX5 PROTEIN AND VASOREGULATORS ARE POTENTIAL DIAGNOSTIC AND THERAPEUTIC TARGETS IN PREECLAMPTIC TROPHOBLASTS

Padmini Ekambaram
Principal, Government Arts and Science College, Perumbakkam, Chennai-600 131
dstpadmini@rediffmail.com

Despite considerable research efforts, the cause of preeclampsia (PE) is not fully understood. PE is assumed to be associated with reduced fetal trophoblast invasion and impaired remodeling of maternal spiral arteries leading to poor uteroplacental perfusion. The improper placentation process triggers oxidative stress and results in defective protein synthesis in the placenta. As a consequence, dysregulated expression of inflammatory, angiogenic, and antiangiogenic factors is observed. Currently, the only treatment is delivery, pinpointing the potentially central role of the placenta (or more generally the maternal-fetal interaction) in the disease. Distal-Less Homeobox 5 (DLX5) protein

consisting of 289 amino acids with a molecular weight of 31.5 kDacorrelates with circulating biomarker Placental growth factor. It is expressed in trophoblasts and has a role in trophoblastic proliferation and differentiation.Also, TGF-β3 which plays a fundamental role in cell growth and differentiation is found to be a pathogenic marker of PE. Studies have reported that failure in the downregulation of TGF-β also plays a key role in the regulation of polyamine synthesis via regulating the expression of ornithine decarboxylase (ODC), an enzyme that is responsible for proper embryonic growth and placental formation. Proper development of vascular networkcan lead to hassle free placental function. Natural medicines with no residual effects with promising pharmacological effects can be explored using the above biomarkers for PE. Indeed, our study evaluated the efficacy of the black and green tea extracts on modulating the expression of these biomarkers in PE trophoblasts. The results reveal the ability of the Tea extracts in modulating the expression of DLX5 and vasoregulators in PE placenta.

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DIPEPTIDYL PEPTIDASE FAMILY OF PROTEINS: THE MULTIFACETED THERAPEUTIC TARGETS OF LIFESTYLE DISEASES

Poornima Priyadarshini C. G.
Department of Molecular Nutrition
CSIR – CFTRI, Mysore
ppriyadarshini@cftri.res.in

Lifestyle diseases are a major threat to global health due to the development of chronic diseases, specifically diabetes, obesity, heart disease, stroke, chronic obstructive pulmonary disease, and some types of cancer. Many physical and therapeutic interventions are in practice to prevent and manage these complications. However, there is still a pressing need to search for novel targets, biomarker and clinical interventions to prevent and manage the complications. Several host factors have been identified in this direction as a potential drug targets for various lifestyle disorders. Many proteins belonging to the family of Dipeptidyl peptidases (DPPs), are known to overexpress during disease conditions and thus are considered as candidate targets for the generation of inhibitors. DPP4, well characterized protein of this family is a multifunctional glycoproteic protease that plays an important role in diabetes and other metabolic disorders. DPP4 degrade hormones, otherwise called the incretins, the glucagon-like peptide (GLP)-1 and the glucose insulinotropic peptide (GIP). These incretins play a major role in maintaining glucose homeostasis by stimulating insulin and inhibiting glucagon secretion. Intriguingly, recent studies reported the crucial association of increased DPP4 activity during inflammation, obesity and CVD. Besides, DPP4 has been recently identified as an adipokine and has a crucial role in obesity. DPPs family also includes the structurally homologous enzymes DPP2, DPP6, DPP8, DPP9, DPP10 and fibroblast activation protein (FAP). DPP10, another member of this group, interacts with phosphorylated tau proteins and is involved in the pathology of AD and other neurodegenerative diseases. Recent advances in the field of nutrition and nutrigenomics has emphasized the significance of food and food molecules in preventing the occurrence and progression of many life style disorders. Thus, our lab focuses on generating and characterizing potential inhibitors from various food sources against identified DPPs.

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MODULATED PROTEIN DIET WITH HIGH CASEIN AND PEA PROTECTS ARSENIC-INDUCED OVO-UTERINE DISORDERS IN ADULT WISTER RATS

Aparna Mukhopadhyay and Prabir Kr. Mukhopadhyay, Department of Life Sciences, Presidency University,86/1, College Street, Kolkata 700073 West Bengal, India
prabir.dbs@presiuniv.ac.in

Arsenic toxicity poses a significant threat to a broad spectrum of female reproductive functions. The effects perhaps involve alteration of ROS homeostasis leading to aberrant redox regulation. The present investigation aims at studying the remedial role of an isocaloric high protein diet (HPD) comprising casein and pea proteins in rescuing the female reproductive system from arsenic insult. Eighteen cyclic female rats were equally divided into three groups and maintained as control, treated

(given As2O3, 3 mg/kg BW/rat/day), and supplemented (given arsenic along with HPD) groups for 28 days. Estrous cycles were monitored, and histomorphometric analyses of uterus and ovary were performed after hematoxylin-eosin staining. Reproductive functions were evaluated using a battery of biochemical, histological and molecular biology techniques. The treatment caused loss of estrous cyclicity, reduction of weight of ovary and uterus, utero-ovarian degeneration as evidenced by light microscopy. Decline of ovarian?5, 3ß-HSD and 17ß-HSD activities with concomitant decrease of serum estradiol level were also noticed. Ovarian DNA damage was preponderant as evidenced by increased comet tail length. The other toxic effects of ovary were associated with attenuated superoxide dismutase activity and increased generation of malondialdehyde and protein carbonyl. Uterine oxidative balance was also disrupted owing to the ROS generating attribute of arsenic which was validated by the increased formation of malondialdehyde and protein carbonyl. The initiation of apoptosis in the uterus was evidenced by western blot analysis and the ultrastructural changes of the uterine luminal epithelia were appraised by scanning electron microscopy. All the alterations observed due to arsenic toxicity were seen to be near normal in the supplemented rats. Arsenic mediates its reproductive toxicity, at least in part, by upsetting the ROS homeostasis and redox regulation of the ovo-uterine physiology. By virtue of the antioxidant properties, HPD, containing pea-proteins and casein can counteract the arsenic effects and maintain optimal reproductive functions despite the exposure to arsenic.

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AME'S TEST – A RAPID AND SENSITIVE TEST FOR MUTAGENICITY, CARCINOGENICITY AND GENOPROTECTIVE STUDIES

Prashantha Naik and Amritha Nair
Dept of P.G Studies and Research in Biosciences, Mangalore University
Mangalagangothri – 574 199, Karnataka, India.
pnmangaloreuniversity@gmail.com

Increased environmental pollution and modern lifestyle related exposure to chemicals paved the way for various adverse health effects, including cancer. As per a Human Development Index (HDI) measured by a team of International Agency for Research on Cancer (IARC), the incidence of cancer is expected to increase by more than 75% by the year 2030 in developed countries, and over 90% in developing nations. Screening the agents (new products, industrial pollutants, etc.) plays important role in preventing or minimizing to exposure to carcinogens. However, usage of animal models for evaluating carcinogenicity and epidemiological studies have their own limitations, in terms of expenditure, maintenance, time required, risk factor, ethical issues, etc. Bruce Ames and his team in 1970s developed a rapid and sensitive method for screening of the carcinogens through mutagenicity. The method is also called bacterial reverse mutation assay, which is also popularly known as Ames test. It is one of the eight tests required under thePesticide Act (USA) and one of six tests required under the Toxic Substances Control Act (USA), US-FDA, UN-EP (United Nations – Environment Programme). On the other hand, there is always a good demand for agents, which can prevent minimize chemicals-induced genotoxicity and carcinogenicity. The Ames test can also be extended for genoprotective / antimutagenicity studies. In the present study, L-ascorbic acid was studied for its possible protective effect against a positive mutagen, cyclophosphamide (CP). Ames test was performed using *Salmonella typhimurium* TA100 (MTCC Acc. No. 1252), a special strain designed to detect base-pair substitution. Three concentrations of ascorbic acid, viz., 10.0, 20.0 and 30.0 µg/plate, dissolved in distilled were taken for dose-response relationship against CP (2.0 µg/plate). The test was performed both in the absence and presence of mouse S9 fraction. The numbers of histidine revertant colonies (CFU/ plate) were counted. Each experiment was conducted in triplicates and statistical analysis was done. The rate of antimutagenicity was determined using the formula [(M-S1)/(M-S0)]×100. The observed data confirmed the mutagenic potency of CP both in the absence (318.7±27.2) and presence of S9 fraction (858.5±38.7). The significant increase in the CFU in the presence of S9 fraction ($p<0.001$) indicates the potential mutagenicity and carcinogenicity of CP after its metabolic activation. Ascorbic acid imparted the dose-dependent antimutagenic effect against CP

as indicated by a significant decrease in the number of revertants. Thus, Ames test, a very rapid and sensitive method can be employed for both mutagenicity and antimutagenicity studies, thereby identification of mutagenic and carcinogenic risk factors and finding protective agents made easy.

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ALTERED INSULIN RECEPTOR SIGNALING IS INVOLVED IN STREPTOZOTOCIN RAT MODEL OF SPORADIC ALZHEIMER'S DISEASE

Rajat Sandhir
Professor, Department of Biochemistry, Basic Medical Science Block II
Panjab University, Chandigarh, 160014, India.
sandhir@pu.ac.in

Evidence from animal studies suggests sporadic Alzheimer's disease (sAD) as a metabolic syndrome with accompanying cognitive deficits. Given that glial cells act as "silent partners" to neurons by providing trophic support and defense, we investigated the role of glia in sAD pathology. A streptozotocin (STZ)-induced glial-neuronal co-culture model of sAD was used to study the metabolic status of the two cell types. Real time RT-PCR and Western blotting results indicated that amyloid precursor protein (APP) and β-secretase (BACE1) were highly expressed in co-cultured neurons than in monocultures. Increased amyloidogenesis was accompanied by decreased expression of mediators in insulin signaling pathway that included insulin receptor (IR), insulin receptor substrate 2 (IRS2), insulin-like growth factor 2 (IGF2), insulin-like growth factor 1 receptor (IGF1R), total-glycogen synthase kinase 3β (t-GSK3β), and phosphorylated-GSK3βser9 (p-GSK3βser9), suggesting that neuronal cells are more prone to metabolic variability when cultured in the presence of glial cells. Findings from the sAD model induced by intracerebroventricular (ICV) injection of STZ revealed that increased amyloid beta (Aβ) load in the hippocampus was potentially responsible for the hyperphosphorylation of tau at ser396. Furthermore, impaired cognitive functions and decreased dendritic spine density and axonal thinning in CA1 region of hippocampus were associated with decreased IR and p-GSK3βser9/t-GSK3β expression. Taken together, the findings provide evidence that glia mediated response and insulin-signaling defects drive pathological changes in sAD and represent potential targets for delaying sAD progression.

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A CLINICAL STUDY ON THE MANAGEMENT OF STHAULYA(OBESITY) THROUGH ERANDAMULADI LEKHAANA BASTI WITH NAVAKA GUGGULU

Rajesh Annappa Udapudi
Principal, Professor & Medical Superintendent,
JSS Ayurveda Medical College & Hospital, Mysuru.
drrajeshudapudi@gmail.com

Introduction -Person‘s life who is suffering from Sthaulya Roga becomes miserably pathetic because of the Doṣa like hampered physical activity, hampered sexual life, extreme lassitude, proneness to dangerous diseases, above all decreased life span.It is widely acknowledged that obesity has emerged as an epidemic in developed countries. It continues to be an issue of great concern. In addition, we now face the emergence of obesity as a worldwide phenomenon, affecting wealthy and middle income people.The objective is to find out the efficacy of Śodhana, Śamana and Pathya in the management of Sthaulya. Hypothesis – The Śodhana, Śamana and Pathya therapies do have a significant role in the management of Sthaulya. Materials and Methods – According to Caraka and Cakradatta Erandam l di Basti and Navaka guggulu are best in the management of Sthulya respectively.30 patients selected as per criteria and examined by means of Roga and Rogi Par kṣ methods. Administered Erandam l di Basti in K la Basti vidhi followed by Navaka Guggulu 3 gms per

day for 30 days with Pathy pathya.Follow up is done for 2 months advising only Pathya. Subjective and Objective parameters were assessed before and after treatments. Results – Paired 't' test was adopted for statistical significance.Results revealed that subjective and objective assessment by score method shows that majority cases got relief . Statistical significance shows in reduction in weight and BMI. Discussion – All the clinical observations in respect of incidences of Nid na, Lakṣa a, and percentage of relief are illustrated by tables, charts, and diagrams, discussed with comparing yurveda. Conclusion – In the present research work undertaken, Ayurveda formulations of Shodhana

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ASSOCIATION BETWEEN INFLAMMATORY CYTOKINE RESPONSES AND ANEMIA DURING SEVERE MALARIAL INFECTIONS

Rajeshwara Achur,
Professor, Dept. of Biochemistry
Kuvempu University, Shankaraghatta 577451, Shimoga District.
rajachur@gmail.com

Malaria continues to be a major public health crisis in almost all developing countries especially in tropical regions, affecting ≥40% of world's population. In 2016, about 216 million cases and 445,000 deaths were reported from 91 countries across the world, in which India accounted for 1.09 million cases and 331 malarial deaths although the actual numbers could be much more. In India, malaria is endemic and mostly persists in the Northern, North-eastern and South-western regions. In Karnataka, the majority of malarial burden is reported from only two districts viz., Udupi and Dakshina Kannada, particularly in the city of Mangaluru. In 2016, Karnataka state reported a total of 15,816 malarial infections, of which Mangaluru alone accounted for 11,037 (69.7%) cases contributed by *P. vivax* (87.9%) and *P. falciparum* (12.1%). Anemia is one of the most common complications during malaria and severe malarial anemia (SMA) is of a major concern due to its high mortality rates particularly in children. Recently, we studied the effect of malarial infections on hematological and biochemical parameters and its associated severe malarial complications among patients suffering from mild and severe malaria infections in Mangaluru. We analyzed the samples for the prevalence of anemia and its intensity, associated severe malarial manifestations and measurement of plasma levels of inflammatory cytokines across varying degree of malarial anemia. The hemoglobin and red blood cell levels were decreased in anemic patients, even during *P. vivax* infections. The TNF-α level were found to be elevated whereas IL-6 and IL-10 levels were lower during severe anemia. We found a strong negative association between levels of hemoglobin and parasitemia, hemoglobin and TNF-α and positive relationship with IL-10; anemic patients had significantly high TNF-α/IL-10 ratio. Severe anemia was associated with complications such as acute renal failure (6.3%), jaundice (6.3%), metabolic acidosis (9.5%), hypoglycemia (4.8%), and hepatic dysfunction (6.3%). Our results suggest that SMA is not only a characteristic feature of *P. falciparum* infections but is also observed during *P. vivax* infections along with associated severe complications. The increased TNF-α, IL-6 and decreased IL-10 suggests a potential role of cytokines in the pathogenesis of malarial anemia.

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LESS EXPLORED DIMENSIONS OF PHYTOCEUTICALS IN INDIAN MEDICINE

Santosh Kumar J.
Principal, Karnataka Ayurveda Medical College, Ashoknagar, Mangalore
sanuayur31@gmail.com

Mankind has been very inquisitive and innovative in reasoning out the secrets of nature. Though not all researches and discoveries have had a constructive effect on the society, but many have contributed to improving our quantity and quality of life. Such improvements are rarely a contribution of any single branch of science. Several sciences collaborate to yield constructive outcomes. Phytoceuticals is fast upcoming branch of science and has reaching consequences on public health. Indian medicines

represent a host of systems which are apart from western system and which are widely practiced in India. Though this includes Ayurveda, Siddha, Unani, Yoga, Varmam and few others. They are unified in their holistic approach where reductionist principle is generally avoided. All these systems have their own contribution in improving the health care system. However, I am confining my presentation to explore few untouched areas in Ayurveda. Ayurveda has solutions to a limitless number of diseases and syndromes, including to those conditions where an immediate diagnosis is not possible in conventional medical terms, this is because principles of health and disease are based on the *TriDosha* concept, an unparalleled link between mind, body and matter. It is often seen that modern pharmaceutical industry tries to explore Ayurveda more as a plant-based medicine however ignoring the principles of Ayurveda. This allows only partial potential of Ayurveda to unfold. If this is the might of Ayurvedic methods, why is there no aggressive research to translate the concepts of this applied science to conventional pharmacological terms? The reason for this less explored dimension of phytoceuticalsand concepts of Ayurveda / Indian medicine is due to its levels of extreme complexity in the make-up of each and every ayurvedic formulation that is either a polyherbal, herbo mineral or herbal-metallic-mineral-animal product with multitude of therapeutically active molecules in each dose of medicine prescribed. A unimolecular vs multi molecular application is seemingly an impediment in initiation and progress of any research. Eg: 1. Pippali (Piper*longum* Linn.) The primary constituents isolated from various parts of *P. longum* are piperine, piperlongumine, sylvatin, sesamin, diaeudesminpiperlonguminine, pipermonaline, and piperundecalidine. However, the same drug pippali as a whole or compounded along other herbs can be used to treat innumerable conditions of autoimmune, inflammatory as well as degenerative pathologies; collectively it means a whole gamut of pathological processes and clinical conditions can be treated with pippali based combinations of medicines. Example 2: Some interesting topical applications in some conditions – Jwara (Fever) - KachuradiChoorna mixed with some amount of oil or water and apply over the Bregma to control high fever. Pratishyaya (Common Cold) - RasnadiChoorna or Asanabilwaditaila Shotha (Swelling)- JatamayadiChoorna Visarpa (Herpes)- Dasanga Lepa It is very clearly seen that the patients improve in all aspects, subjectively and objectively when the above applications are used. What remains to be explored, studied and established is how these topical drugs act from a purely pharmacological perspective, this kind of work requires a dedicated interdisciplinary approach between Ayurveda and pharmacological science faculties, and through such collaborative works, it is very likely that a synthesis of a new array of pharmaceutical products be discovered and standardised.

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POSITIVE AND NEGATIVE MODULATION OF PROTEIN ARGININE METHYLTRANSFERASE 5 AND METHYLOSOME PROTEIN (PRMT5-MEP50) AND ITS IMPLICATIONS

Santosh R. Kanade,
Krishna Ghosh and Biji Chatterjee
Department of Plant Sciences School of Life Sciences
University of Hyderabad, Gachibowli, Hyderabad, Telangana
san@uohyd.ac.in

The protein arginine methyltransferase 5 (PRMT5) and its catalytic partner methylosome protein MEP50 (WDR77) catalyse the mono- and symmetric di-methylation of selective arginines in various histones and non-histone target proteins. It is emerged as a crucial epigenetic regulator in cell proliferation, differentiation and also overexpressed in many forms of cancers in humans. We assessed the functional modulations of PRMT5-MEP50 upon exposure of multiple environmental factors (Curcumin and Lead (Pb)). We exposed the multiple cells models at different doses, time and observed a significant effect on the expression of both PRMT5 and MEP50. The level of symmetrical dimethylarginine (SDMA) in multiple proteins, and more specifically, the H4R3me2s mark was ultered significantly. Upon Pb exposure CpG island on the PRMT5 promoter proximal region was demethylated which leads the PRMT5 lead over expression. This increase in the PRMT5 expression might be one of the contributing epigenetic factors in the Pb mediated disease, as PRMT5 has a versatile role in cellular functions and oncogenesis. Further, curcumin reduced the PRMT5-MEP50

expression significantly by reducing the loading of transcription factors (Sp1 and NF-YA) binding sites of the PRMT5 promoter. Furthermore, the involvement of both PKC-p38-ERK-cFos and AKT-mTOR signalling pathway reduce the Sp1 and NF-YA expression decreased the expression of PRMT5-MEP50. The present study revelaed that curcumin attenuated the Pb induced functional expression of PRMT5-MEP50 activity.

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ROLE OF ACTIVE PRINCIPLES OF PAPAYA LEAF EXTRACT - COLLAGEN COMPOSITES IN WOUND HEALING - A STUDY

B. K. Sarojini
Professor of Industrial Chemistry, Department of Industrial Chemistry
Coordinator, M.Sc., Course in Biochemistry
Mangalore University, Mangalagangothri-574199, Mangaluru, Karnataka, India
bksaroj35@gmail.com

Wound healing is a biological process involving tissue repair and regeneration. During the inflammatory phase, protease such as matrix metalloproteinases (MMPs) are attracted to the wound and play very important role in breaking down unhealthy extra cellular matrix (ECM) which helps to form the new tissue. When increased levels of MMPs are present for a longer period, they destruct the healthy ECM, results in delayed wound healing and an increase in wound size. When the excess of MMPs are not balanced by normal physiological processes, alternative methods are required to reduce protease levels in the wound. This suggests application of collagen in the wound management. Collagen is the principle animal connective tissue, composed of approximately 30% of the total protein. Dressings containing piscean collagen have demonstrated a high level of biocompatibility, while animal studies have also showed that collagen extracted from fish did not produce any allergic reactions and was comparable to mammalian collagens. Collagen forms a barrier between the wound and the surrounding bacteria decreasing the risk of infection. Papaya leaf extract is rich in vitamins, phenols and proteolytic enzymes which act as a good antioxidant and an excellent antimicrobial agent. Quantitative analysis showed that the presence of phenolic acids as the main component compared to the flavonoids. The present study aimed at studying the synergic effect of composites of papaya leaf extract active principles and collagen on wound healing. *In vitro* study was carried out to investigate the wound healing effect of phenolic compounds of papaya leaf extract such as caffeic acid, coumaric acid, quercetin and fatty acid (oleic acid) and collagen composites. Results represented interesting findings in these experiments.

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AN EFFICACY OF PHYTOCEUTICALLY POTENT SELECTIVE CLASSICAL SINGLE P "*EKA MOOLIKA PRAYOGA*'' IN M N M N O OPHTHALMIC AND ENT MANIFESTATIONS – AN AYURVEDA PERSPECTIVE

Shivanand Gavimath,
Proffesor & Head, Dept of Shalakya Tantra,
JSSAyurveda Medical College &Hospital, Lalitadripura Road, Mysuru-28
shiva.shalakya@gmail.com

Biodiversity of natural resources has served not only for the primary human needs but also for health care, since time immemorial. According to WHO estimate, about 80% of the world population relies on traditional system of medicines for primary health care. The plant species explained in the ancient classical texts of Ayurveda have multifaceted activity, which can be used in the various diseases judiciously. A single drug which contains a specific Rasa, *Guna*, *Veerya*, *Vipaka* and *Prabhava* will exhibit different actions if used with a natural solvent. Even though they contain vitamins, minerals

proteins, carbohydrates, essential oils, tannins, alkaloids, bitters and flavonoids, each part of the plant contain distinctive pharmacological action and plant as a whole {*panchanga*} will exhibit a different action if used with a‖ *Yogavahi*‖ or {catalystic vehicular solvent}.Here specific single drug therapy can be used in different ENT/ophthalmological conditions with different *Yogavahi* which have been in use since few centuries *Amalaki* {phyllanthus emblica linn} can be used in infective conjunctivitis, anti - cataract activity management of epistaxis, allergic rhinitis and oral ulcers and in specific migrains*Bilwa*{aegle marmelos corr} can be used in sub onjunctival hemorrhage, epistaxis, migaine, ear infections and furunculosis..*Daruharidra* {berberis aristata Dc} has anti infective, anti allergic properties, hence is used in the treatment of corneal ulcers , meibomian cysts, turbinatal hypertrophy, oral ulcers and otitis externa*akamachi* {solancem nigrum linn} which shows immunomodulatory activity and anti allergic activity has been used in the treatment of acute pharyngitis, ear disorders, scalp disorders.*Punarnava* {Boerhavia diffusa linn} has got anti allergic, anti bacterial, anti cataractous, anti cancer, anti diabetic, anti microbial activities . Hence it is used in the treatment of conjunctivitis, oral ulcers, oto-toxicity, nasal disorders. *Patola* {trycosanthes cucumerina linnsp} is used in the ophthalmic posterior segmental disorders, nasal bleeding, atropic rhinitis and vascular headaches. *Yastimadhu* {glycyrrhiza glabra linn} is a very effective remedial drug used in conjunctivitis, submucosal fibrosis, nasal allergies and bleeding, ear disorders and in scalp disorders. *Vasa* {adhatoda vasica nees in wall} is a very effective drug in the management of vascular disorders, gum bleeding, diabetic reticulopathies and specific nasal allergies The detailed actions and properties and *Yogavahi* solvants will be discussed later

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WOUND-HEALING ACTIVITY OF THE SKIN OF THE COMMON GRAPE (*VITISVINIFERA*)

B. Shivananda Nayak
Professor, Faculty of Pre-Medical Sciences
The University of West Indies, Trinidad &Tobago
shiv25@gmail.com

The common Grape *L.* (*Vitaceae*) is regarded as an important medicinal plant. European healers have suggestedthe use of grapevine sap, juice, and whole grape in the treatment of pain, allergic reactions, inflammation, and to promote wound healing. We evaluated grape-skin powder for its wound-healing activity using an excision wound model in rats. Animals were randomly divided into three groups of six (n = 6) each. The test group animals were treated topically with the grape-skin powder (100 mg/kg/day). The controls and standard group animals were treated with petroleum jelly and mupirocin ointment respectively. Healing was assessed by the rate of wound contraction, period of epithelialization, and hydroxyproline content. On day 13, treatment of the wounds with grape-skin powder enhanced significantly the rate of wound contraction (100 %). Treated animals showed significant decrease in the epithelialization period ($p < 0.000$) and increase in the hydroxyproline content ($p < 0.05$) when compared to control and the standard. Histological analysis was also consistent with the proposal that grape-skin powder exhibits significant wound-healing potential. Increased rate of wound contraction, hydroxyproline content, and decrease in epithelialization time in the treated animals support the use of grape skin powder in the management of wound healing.

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PLANT TISSUE CULTURE: AN *IN-VITRO* OPTION FOR SUSTAINABLE SYNTHESIS OF PHYTOCHEMICALS.

Smitha Hegde and Indrani Karunasagar
Nitte University Centre for Science Education and Research
Paneer Campus, Deralakatte, Mangalore 575018
Smitha.hegde@nitte.edu.in

Plants, irrefutably are a major source of medicines, since time immemorial. However, indiscriminate use and human interference have led to the rapid decline of several medicinal plants in our forests. The need for sustainable use of plant flora is urgent and immediate. Plant tissue culture offers an alternative, eco-friendly method for production of these useful phytochemicals in a sustainable manner *in-vitro.* The techniques were primarily developed for the production of the plants in large numbers, today it has expanded its applications towards the production of medicinal compounds independent of the whole plant. Unadulterated, pesticide-free, season independent supply of phytochemicals are successfully produced using techniques of callus culture, somatic embryogenesis, and rhizogenesis. The methods and case studies of phytochemical production using tissue culture methods will be presented and discussed.

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EFFECTS OF OMEGA-3 FATTY ACIDS ON CANCER

Suchetha Kumari N[1*],
Jayaram Shetty[2], Vijith Shetty[2], Preethika A[3], Ullal Harshini Devi[3]
[1]Department of Biochemistry, [2]Department of Oncology, [3]Central Research Laboratory, K S Hegde Medical Academy, Deralakatte, Mangaluru – 575018
suchetha.shetty@rediffmail.com

Dietary fat has long been recognized as an important source of energy for mammals, but inthe late 1920s, researchers demonstrated the dietary requirement for particular fatty acids, which came to be called essential fatty acids. It was not until the advent of intravenous feeding, however, that the importance of essential fatty acids was widely accepted: Clinical signs of essential fatty acid deficiency are generally observed only in patients on total parenteral nutrition who received mixtures devoid of essential fatty acids or in those with malabsorption syndromes. These signs include dermatitis and changes in visual and neurological function. Over the past 40 years, an increasing number of physiological functions, such as immunomodulation, have been attributed to the essential fatty acids and their metabolites, and this area of research remains quite active.Epidemiological studies have suggested that groups of people who consume diets high in omega-3 fatty acids may experience a lower prevalence of some types of cancer, and many small trials have attempted to assess the effects of omega-3 fatty acids on cancer treatment by adding omega-3 fatty acid to the diet either as omega-3 fatty acid–rich foods or as dietary supplements. In addition, dietary omega-3 fatty acids have been found to modulate mammary tumor formation and proliferation in rodents. Tumoricidal and innocuous action on normal cells of PUFAs suggest that they can be exploited as anticancer molecules and as possible as anticancer drugs. Development of selective delivery of polyunsaturated fatty acids and their tumoricidal metabolites may form a new approach in the preventation and treatment of cancer.

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SURVIVAL AND LOGISTIC REGRESSION TECHNIQUES IN BIOMEDICAL SCIENCES

Suresh Kumar Sharma
Professor, Department of Statistics & Ex-Coordinator, Centre for Systems Biology
& Bioinformatics Panjab University, Chandigarh, India
ssharma643@yahoo.co.in

With the increasing use of biotechnology in medical research and the sophisticated advances in computing, it has become essential for practitioners in the biomedical sciences to be fully educated on the role statistics plays in ensuring the accurate analysis of research findings. Statistical advances in the Biomedical Sciences explore four major areas of modern-day biomedical science: clinical trials, epidemiology, survival & logistic analysis, and Bioinformatics. Survival analysis is one of the primary statistical methods for analyzing data on time to an event such as death, heart attack, device failure, etc. Such data analysis is essential for many facets of legal proceedings including apportioning cost of future medical care, estimating years of life lost, evaluating product reliability, assessing drug

safety, measuring viability of medical therapies and devices, assessing actuarial loss, etc. This branch of empirical science entails gathering and analyzing data on time until failure or death. Survival analysis makes inference about event rates as a function of time. The two primary methods to estimate the true underlying survival curve are the Kaplan-Meier estimator and Cox proportional hazards regression Model. Similarly, logistic regression is applicable to situations where the dependent variable is dichotomous. It is useful where we want to predict the presence or absence of a characteristic or outcome on the basis of predictors that can be either numerical or categorical. This model can describe the relationship between one or more risk factors for example age, Cholesterol Level, Hypertension etc. and an outcome such as death, which takes only two possible values i.e. dead or alive. In this research both survival and logistic methods will be discussed with practical applications to the field of biomedical sciences.

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PHYTOCEUTICALS OF *ANISOMELES INDICA KUNTZE*

Giridhara Basappa, Vadlapudi Kumar*, Poornima DV, Manjunath T, Torankumar Sannabommaji, HariGajulaand Rajashekar J Department of Biochemistry, Davangere University, Shivagangothri, Davangere-577007, Karnataka, India
Veeke2012@gmail.com

Anisomeles indica Kuntze is an aromatic fragrant annual woody plant. It originates wild throughout borders of subside areas at low and medium horizon. Leaves of *A. indica* are extensively used in the treatment of inflammatory skin diseases, liver diseases and protection, gastrointestinal diseases, hypertension and immune system deficiencies. Previous reportson *A. indica*showed that anti-inflammatory activity, free radical scavenging activity, cyclooxygenase inhibitory activity. The present study describes the extraction, isolation and characterization of phytoceuticals present in leaves of *A. indica*. Extraction was carried out in different ranges of polar solvents. Further, isolation and characterization of phytoceuticalswas carried out by qualitative and quantitative analyses using chromatography and spectroscopy techniques such as, TLC, RP-HPLC, GC-MS, LC/MS-ESI, FTIR and H^1 NMR. Results revealed that, *A. indica* leavesare rich source of essential oil and flavonoids such as flavonols, flavones, isoflavones, flavonones, hydroxy flavonols, their glycosides and glucuronides. Biological properties of essential oil and flavonoid fraction were investigated. Resultsof the investigations provide a comprehensive account of knowledge of phytoceuticals present in the *A. indica* leaves.

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POTENTIALS FOR MEDICINAL RESEARCH ON ARECANUT, *Areca catechu* L.

S. Keshava Bhat
Arecanut Research and Development Foundation ®, Varanashi Towers, Mission Street, Mangaluru: 575 001
Ardf1998@gmail.com Mob: 8277085489

Plants have rich source of phytochemicals with lots of medicinal properties. Such medicinal values are being used widely by traditional healers. Several researchers have now validated the ethnomedical properties of such plants with proper scientific data. Applications of such knowledge might be very useful against several human ailments. The fruit of areca palm, *Areca catechu* L, commonly called as arecanut is mostly chewed for its medicinal values. This nut is also called as 'betel nut' as it is mostly chewed along with the leaves of *Piper betle*. In hindi, it is called as 'supari'. Areca palm contains good amount of polyphenols (nearly 30%) in its nuts, leaves and even roots. However, very less research work has been done on the medicinal properties of this palm. Present review is focused on compiling such works by searching Google scholar, Pub Med, textbooks and old journals. India is number one in arecanut cultivation by producing nearly 7.0 lakh metric tons from 4.5 lakh hectares. This palm is the reservoir of many useful compounds having ample medicinal values. There are enough Scientific evidences to substantiate this. It was reported that almost all parts of this palm including the nuts, its husk, leaves, roots, inflorescence, tender stem, etc have antibacterial, antifungal, anti-malerial, anti venom, anti-diabetic, lipid lowering, wound healing, analgesic, anti inflammatory, memory improvement, anti oxidant, anti-helmintic anti HIV and so on. The extract of arecanut was even reported to suppress the development of tumors in mice and reduce the bad effects of smoking in human being. The Research papers in support of all these findings are discussed in detail in this review. However, there is an urgent need to properly identify the actual chemical compound responsible for such medicinal values and to prescribe the correct dosage required. It is the combined responsibility of the Researchers, Pharmacologists, medical Scientists and others working in similar fields to work together so that such bio-medical compounds could be better utilized for the benefit of mankind.

AWARD PAPERS

Yellapragada Subbarow Award

MENTAL STRESS INDUCED CORRECTED QT INTERVAL CHANGES IN THE MILIEU OF A NORMAL MENSTRUAL CYCLE.

Jnaneshwara P Shenoy[1], Shivakumar J[2*], Sahana PA[3], Preethi J Shenoy[4]
Professor & Head, Department of Physiology, Father Muller medical college, Mangalore, Karnataka
Associate professor, Department of Physiology, Karnataka Institute of Medical Sciences, Hubli Karnataka
Intern, Father Muller medical college, Mangalore, Karnataka
Associate professor, Department of Pharmacology, Kasturba medical college, Mangalore, Manipal University, Karnataka
drjnani@fathermuller.in

Introduction and Aim: Corrected QT interval (QTc) values are consistently different between males and females, and sex hormones are the likely causative agents for this. The aim of the present study was to study the effect of different phases of menstrual cycle on QTc at resting conditions, as well as when exposed to mental stress in young healthy females. Materials and Methods: ECG recordings of 28 healthy women in the age group of 18-25 years were used for QTc estimation using Bazett's formula. The mean values of QTc obtained during the follicular and luteal phases of the menstrual cycle, both during resting conditions as well as during mental stress were statistically analysed using paired t test and significance was set at $P<0.05$. Results: In this study the QTc values during resting as well as the mental stress task were similar in both phases of the menstrual cycle and were statistically not significant. The mental stress task (serial subtraction task) as such produced a significant prolongation of the QTc values in both the follicular ($p < 0.01$) as well as the luteal phases ($p < 0.001$), when compared to the basal values in the respective phases. But the change in QTc values due to mental stress intervention i.e. ΔQTc was similar in both the phases and was not significant. Conclusion: Resting QTc values did not vary during the different phases of menstrual cycle and mental stress produced the anticipated increase in QTc values, but even these were similar during the follicular and luteal phases.

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Mrs. Thangam Vasudevan Award

POULTRY: A RECEPTACLE FOR NON-TYPHOIDAL SALMONELLAE & ANTIMICROBIAL RESISTANCE

[a] Sohan Rodney Bangera, [b] Shashikiran Umakanth, [f] Goutam Choudhary, [g] Rudra Narayan Saha, [c] Asish K Mukhopadhyay, [e] Kiran Chawla, [d] Mamatha Ballal.

[a] Ph.D. Research Scholar, [d] Professor of Microbiology & Enteric Diseases Division -Head, [e] Head-Department of Microbiology, Kasturba Medical College Department of Microbiology, Kasturba

[b] Professor, Department of Medicine, Melaka Manipal Medical College, Manipal Academy of Higher Education, Manipal

[c] Scientist E, [f] Post-Doctoral fellow, [g] Ph.D. Research Scholar, Division of Bacteriology & Deputy Director, National Institute of Cholera and Enteric Diseases, Kolkata

Division of Bacteriology, National Institute of Cholera and Enteric Diseases, Kolkata, India

Introduction: Non-typhoidal Salmonellosis, a zoonotic infection associated with acute gastroenteritis is caused by non-typhoidal salmonellae (NTS). The infection usually occurs by ingesting contaminated food of an animal origin such as meat, poultry and its products. Salmonellae reside in the intestines of commercially reared poultry and have a high isolation rate. Thus, NTS from poultry sources can transmit infections to humans and is a public health threat. This study was carried out to determine the prevalence of NTS serovars and their antimicrobial resistance along with the presence of *invA* gene in poultry samples. Methods: A prospective cross-sectional study carried out at the Enteric Diseases Division, Kasturba Medical College, Manipal from January 2016– December 2017. Poultry samples were collected randomly from two local poultry farms in Udupi district and processed following CDC standard protocol. Results: From the 396 poultry meat samples and intestinal contents collected, 58 NTS serovars were isolated showing a prevalence of 14.64%. *Salmonella Infantis*, 41.37 % (24/58) was the commonest serovar followed by *Salmonella Kentucky* and *Salmonella Worthington*. The antimicrobial resistance pattern showed resistance to ciprofloxacin 72.41%, ampicillin 32.8%, gentamicin 17.24%, cotrimoxazole 29.31% and amoxicillin-clavulanic acid 6.9%. The *invA* gene was detected in 42 NTS isolates (72.41%). Conclusion: NTS isolates have shown an increased resistance to quinolones, penicillins, cotrimoxazole and beta lactamase inhibitors due to the inappropriate use of antibiotics in food animals contributing to the increase in antimicrobial resistance. These resistant strains can directly infect humans through food and can easily cause invasive infections in humans. Managing the public health threat posed by antimicrobial resistance requires effective antimicrobial surveillance programmes, proper food handling practices and prudent use of antibiotics in the poultry.

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Oral presentations

OF01 | ISOLATION AND CHARACTERIZATION OF GUT BACTERIA WITH ANTIMICROBIAL AND ANTIOXIDANT POTENTIAL FROM SHRIMP CULTURE ENVIRONMENT

Kiran RC, Nithin M S[1], Girisha S K[1] and Ajay S K[2]

[1]Department of Fisheries Microbiology, College of Fisheries, Mangalore- 575 002, India.

[2]Department of Biochemistry, College of Fisheries, Mangalore- 575 002, India.

Use of probiotic bacteria in aquaculture has gained lot of importance and is considered as an important strategy to improve animal health and overcome disease problems. Therefore, isolating potential gut bacteria from the aquaculture environment in which they grow optimally is a better approach. In the present study, potent probiotic bacteria were isolated from shrimp culture environment such as pond sediments, waters and shrimp gut. From the total of 56 samples analysed (30 shrimp samples,16 water samples and 10 sediment samples), a total of 280 bacteria isolates were obtained in which only 6 isolates (2.2 %) namely A1, B1, B5, M4, M5 and M7 showed antibacterial activity against *Vibrio parahaemolyticus* and *V. harveyi* by spot assay method. And these isolates were further subjected to well diffusion assay further, the isolates obtained were able to prevent the growth of both fish/shrimp and human pathogenic bacteria such as *V. anguillarum, V. alginolyticus, Escherichia coli, Listeria monocytogenes, Aeromonas hydrophila, Edwardsiella ictaluri, Streptococcus pneumoniae, Salmonella paratyphi* by cross streak assay. These isolates were subjected to perform further *in-vitro* assays such as pH tolerance, salt tolerance and growth temperature range. Hemolytic assay was performed to check the pathogenicity of the bacteria. The isolates B1, B5, M4 and M7 showed γ hemolysis on blood agar and hence considered as non-pathogenic while isolate M5 which showed β hemolysis was not considered as it showed virulence potential. After screening for potential probiotic characteristics, 4 isolates were identified biochemically and molecularly by 16s rRNA sequencing method. Isolate B1 was identified as *Lactococcus lactis*, B5 as *L. garvieae*, and M4 as *Staphylococcus epidermis* and M7 as *Bacillus cereus.* Methanolic extract of these bacterial metabolites showed 84% scavenging activity by DPPH method. These bacterial isolates have potential use as probiotics in aquaculture as well as in human health.

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OF02 | IN-VITRO ANTIBACTERIAL ACTIVITY OF NEEM, CLOVE AND CINNAMON AGAINST ACTINOBACILLUS SPS ISOLATED FROM CHRONIC PERIODONTITIS INFECTED PATIENTS

Ambarish S. Sindagi[1], Anmol G.K[2], Shrinath S.Josh[3], A.S.Bellad[4]and Manohar G. Pattar [5 1-

[5]Department of Microbiology, Karnatak Science College, Dharwad, Karnataka, India.

ambarishimb.s@gmail.com

Introduction and Aim: Periodontal diseases represent possible reservoirs of opportunistic bacteria in the oral cavity, which display important evidence properties and cause wide range of human systematic diseases including pneumonia, septicemia and endocarditis. The aim of the study is to at isolate, identify and characterize the periodontal pathogens from infected patients and also to check antimicrobial activity of isolated pathogen against neem, clove and cinnamon on extracts. Materials and Methods: In the present study the five clinical samples were collected from patients suffering from chronic periodontitis in the age group ranging from 16-30 years. Dental pathogen *Actinobacillus* sps were isolated from clinical samples. The antimicrobial assay of was carried by agar well diffusion method at 2%,4%,6%,8% and 10% concentration of neem, clove and cinnamon in aqueous and acetone solvents. The standard antibiotics tetracycline and azithromycine (30mcg/ml) were used as positive control. Results: The results of antimicrobial assay showed that aqueous extracts of clove and neem had very effective zone of inhibition (24&22mm) against *Actinobacillus* sps at 2%concentration, while cinnamon aqueous extracts exhibited moderate zone of inhibition (16mm) at the same concentration. The acetone extracts of neem and clove exhibited good inhibitory action (20&18mm) against *Actinobacillus* sps compare to cinnamon which showed moderate zone of inhibition (14mm). Conclusions: It can be concluded from the study that neem, clove, cinnamon

extracts can be explored as an alternative therapy in the treatment of chronic periodontal disease. It can also be indicated from the results that the active compounds of the plant extracts are considered to have the ability to suppress the growth of periodontal pathogen *Actinobacillus* species.

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OF03 | AN INTEGRATED OCCUPATIONAL AND ERGONOMIC STUDY ON THE EVALUATION OF HEALTH STATUS OF FEMALE CONSTRUCTION WORKERS OF WEST BENGAL, INDIA

Anandi Bagchi[1], Sugata Das[2] Titlee Majumdar[3] & Subrata Ghosh[4]

[1]Department of Physiology, Jhargram Raj College Girls' Wing, Jhargram *

[2,3,4] Department of Physiology, Hooghly Mohsin College,

Chinsurah 712101, West Bengal, India

anandibagchi76@gmail.com

Background: Modernization and industrialization have paved a good path to the construction industry. As per Census 2011, the total number of female workers in India is 149.8 million.Objectives: To identify different health problems amongst female workers working in the construction industry in West Bengal, to assess health status of these female construction workers with respect to their occupational hazards and hormonal dysfunctions and recommend some low cost easily available supplement in controlling or preventing these potentially damaging impacts; to quantify the damages in terms of questionnaire method and to recommend some early markers of job-stress and immediate ways to protect these workers. Materials and Methods: The study was a double-blind study with intervention conducted in different construction sites of Howrah, Hooghly, and 24 PGS of West Bengal amongst female construction workers. All general physical parameters (Systolic Blood Pressure, Diastolic Blood Pressure, Pulse Pressure) performance parameters (COHb%, Force Vital Capacity, Slow Vital Capacity, FEV1/FVC, FEV1/SVC), reproductive hormonal parameters (Progesterone/Estrogen ratio, FSH) oxidative stress parameters (GSH, SOD and Catalase), ergonomic parameters (Ovako Working Analysis System, Rapid Entire Body Assessment, Rapid Upper Limb Assessment), and pain index parameters (Shoulder and Pain Disability Index, Nordic Questionnaire) were performed in pre intervention and some specific parameters were measured in post intervention by standardised procedure. Workers were asked to take Cholecalciferol 60000 IU (once in a week), raw turmeric and one piece of raw garlic in the morning in empty stomach and tomatoes, spinach, onions and egg thrice a week were included in their daily food.Result: Workers showed comparatively closer to normal values in Vit D, GSH, SOD progesterone-estrogen ratio, cortisol status ($p<0.05$) after 2 months intervention study. Conclusion*:* Due to stressful job routine & malnutrition probably, female construction workers faced abnormal level of reproductive hormone and oxidative stress hormonal parameters. Uses of vitamin capsule, raw turmeric, raw garlic, green leafy food, tomatoes, spinach etc were found to balance all hormonal levels moderately. Can this be the only ameliorative approach for such occupational stress?

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OF04 | CHANGES IN THE EXPRESSION LEVEL OF IL-17A AND P53-FIBRINOLYTIC SYSTEM IN SMOKERS WITH OR WITHOUT COPD

Shetty Ashwini, Gouda MM, Shaikh SB, Chengappa D, Kandhal I, Bhandary Y

Yenepoya Medical College, Yenepoya (Deemed to be) University, Mangalor

COPD is a chronic airway inflammatory disease characterized mainly by neutrophil airway infiltrations. The neutrophil airway inflammation is mainly mediated through a key player like the pro-inflammatory cytokine IL-17A which is involved in the modulation of p53-fibrinolytic system. This study was undertaken to examine the molecular changes for the expressions of IL-17A and p53-fibrinolytic system in smokers with or without COPD. Blood and serum samples were collected from ten patients of smokers having COPD and ten samples from smokers without COPD and ten healthy control subjects. Western blot analyses were performed to evaluate the expressions of IL-17A, p53 and PAI-1. Apoptosis was assessed by immunoblot for cleaved caspase-3. In addition, FEV% was also determined of these patients. qRT- PCR was done to detect the gene expression study from the blood samples on p53-fibrinolytic components. A significant difference was found in the expression levels of

IL-17A in smokers with COPD patient when compared to smokers without COPD and the control subjects. Similarly, the smokers with COPD showed significant increase in the fibrinolytic component PAI-1 as well as in expression levels of p53 when compared to smokers without COPD and normal subjects. Increased cleaved caspase-3 may also promote apoptosis. The expression pattern of the IL-17A in chronic obstructive pulmonary distress syndrome samples was increased as compared of those of normal samples, and their main role in the regulation of and p53-fibrinolytic system makes these components as a predictive prominent component in smokers with COPD. Details of the study will be explained during presentation.

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OF05 | EFFECT OF B. TOMENTOSA LEAF EXTRACT ON EPIGENETIC MARKERS OF LUNG CANCER

Balabhaskar R[1] and Vijayalakshmi K[2]

R. Balabhaskar, Research Scholar, Department of Biochemistry, Bharathiar University Coimbatore

rbalabhaskar@gmail.com

[1]Research Scholar, Department of Biochemistry, Bharathiar University, Coimbatore-641046.

[2]Associate Professor, Department of Biochemistry, Bharathi Women's College, Chennai

Epigenetics is defined as a heritable change in gene activity and expression that occur without alterations in DNA sequence. Epigenetic modifications are reversible that makes them potential method for providing cancer preventive and therapeutic strategies.B. tomentosa is a medicinal plant that belongs to the Caesalpinaceae family. It has many potential phytochemicals which confer antioxidant, anti inflammatory and anticancer activity to the plant. The present study is aimed at to investigate the effect of ethanol extract of B. tomentosa (EBT) on various epigenetic markers like DNMT 3a, DNMT 3b, HDAC1, H3 and Acetyl Histone proteins in lung cancer cell line, A549. The expression of these protein markers was studied by western blotting method. From the results, it was observed that the EBT down regulated the expression of pro carcinogenic markers like DNMT3a, DNMT 3b and HDAC1. The expression of anti carcinogenic markers H3 and Acetyl histones were upregulated by EBT. Hence it can be concluded that EBT has potential anti cancer effect at the epigenetic level also. Further identification and isolation of active principle may throw light in the path of drug discovery for lung cancer.

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OF06 | A COMPARATIVE STUDY ON THE EFFECT OF NYAGRODHADI GANA KASHAYA WITH MADHU IN DYSFUNCTIONAL UTERINE BLEEDING WITH THAT OF ASOKA VALKALA KSHE ERA KASHAYA

Emy S. Surendran[1]; N. Vijayakumar [2]; S. Shahinamole[3]

Research officer, RARIL SD, Trivandrum[1], Professor and Associate Professor, Dept of Prasooti Streeroga, Govt Ayurveda College, Trivandrum[2,3]

The abnormal uterine bleeding is one of the commonest conditions we come across in clinical practice. Dysfunctional Uterine Bleeding, one of the most common and significant complaints is seen in about 10-15% of women attending the gynaec OPD. It has an adverse effect on the quality of life of women. It is a common reason for referral into secondary care. The scenario of patients seeking Ayurvedic management for abnormal uterine bleeding is increasing and hence it is essential to find out an Ayurvedic drug which can manage the excessive menstrual bleeding. Abnormal menstrual bleeding can be seen in the descriptions of *Asrugdara*, *asta Arthava dushti*, *yoniroga* etc. *Methodology:* The aim of the present study was to determine the efficacy of *Nyagrodhadi gana kashaya* in reducing the amount and duration of bleeding in DUB and to compare the result with that of *asoka valkala ksheera kashaya*. Total 40 patients were included in the study, 20 patients in each group. Study group was given 60 ml of *Nyagrodhadi gana kashaya* and the control group was given 60 ml *asoka valkala ksheera kashaya* twice daily for 3 months. *Nyagrodhadi gana kashaya* was found to be more significantly effective in reducing the amount ($p<0.001$) and duration of bleeding ($p<0.001$) than *asoka valkala ksheera kashaya*. *Conclusion: Nyagrodhadi gana kashaya* gives better results in the management of DUB. It is a safe and quick acting remedy for DUB.

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OF07 | SYRINGIC ACID INDUCES APOPTOSIS IN HUMAN ORAL SQUAMOUS CARCINOMA (SCC-25) CELLS

Ezhilarasan D*, Abhijit B
Department of Pharmacology, Saveetha Institute of Medical & Technical Sciences, Chenni, Tamilnadu
Department of Pharmacology and Biomedical Research Unit and Lab Animal Centre, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India – 600 077

Background & aim: Oral squamous cell carcinoma (OSCC) is one of the most common oral cancers and is a leading cause of cancer-related death worldwide.Despite advances in screening, and new technologies in diagnosis and treatment, its incidence and mortality continue to rise. Syringic acid (SA) have been shown to have myriad beneficial effects against several diseases other than OSCC. Hence, this study was aimed to evaluate the cytotoxic potentials of SA on human OSCC SCC-25 cell line.Methods: SCC-25 cells were treated with 25 and 50 of SA for 24 h and cytotoxicity was evaluated by MTT assay. Morphological changes of apoptosis were analyzed by acridine orange/ethidium bromide (AO/EB) dual staining using fluorescent microscopy. The apoptotic marker genes analysis was performed by PCR.Results: SA showed a concentration-dependent cytotoxicity against OSCC cells. Red florescent emitting AO/EB positive cells in experimental groups confirm the apoptosis related morphological changes. SA treatment caused an up regulation of pro-apoptotic marker genes such as caspases 3 and 9, cytochrome c, and Bax gene expressions further indicating the molecular evidence of apoptosis induction in OSCC cells. This treatment also caused significant down regulation of anti-apoptotic marker Bcl-2 expression. Conclusion: These results demonstrate the potential of SA as a pro-apoptotic and chemo-sensitizing agent for OSCC.

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OF08 | DEVELOPMENT OF A COMPUTER AIDED DIAGNOSTIC SYSTEM FOR AUTOMATIC EXUDATES DETECTION INDIABETIC RETINOPATHY SCREENING

G. Kulanthaivel and C. A. Sathiyamoorthy*
Professor of ECE, NITTTR, Chennai &
*Associate Professor, CMS College of Engineering, Namakkal, India.

Diabetic Retinopathy (DR) is globally the primary cause of visual impairment and blindness in diabetic patients. Retinal image is essential and crucial for ophthalmologists to diagnose diseases. Many of the techniques can achieve good performance on retinal feature which are clearly visible.

One of the main symptoms for vision loss is Exudates and it could be prevented by applying an early screening process. In the existing systems, a Fuzzy C-Means clustering technique is used for detecting the exudates for analyzation. The main objective of this paper is, to improve the efficiency of the Exudates detection in diabetic retinopathy images. To do this, a three Stage approach is introduced for detecting and extracting the exudates automatically from the retinal images for screening the Diabetic retinopathy. Three Stage functions on the image in three levels such as Pre-processing the image, enhancing the image and detecting the Exudates accurately. After successful detection, the detected exudates are classified using Gray-Level Co-occurrence Matrix (GLCM) method for finding the accuracy. The Three Stage approach is experimented using MATLAB software. The performance evaluation can be proved by comparing the results with the hand-drawn ground truths images from the expert ophthalmologist and with the existing approachs. Result: Overall, the simulation outputs show that preprocessing, Image enhancement, Tumor segmentation, Feature extraction and classification together provide automatic exudate detection on any image. This proposed approach basically motivates to help ophthalmologists in Diabetic Retinopathy Fundus Images (DRFI) screening process to detect and decide the conditions faster and more easily. This result can also be extended with

OF09 | GC-MS FINGERPRINTING AND *IN SILICO* MOLECULAR DOCKING ANALYSIS OF SECONDARY METABOLITES FROM *ANETHAM GRAVEOLENS* L. SEEDS FOR ANTI-INFLAMMATORY ACTIVITY

Gayathri Gunalan[1], R. Rathinamala[2] and A. Rajendra Kumar[3]
[1]Research Officer (Biochemistry), [2, 3]Research Officer (Siddha)
Siddha Regional Research Institute (under CCRS), Kuyavarpalayam, Puducherry, Pincode – 605013.
ggsrri16@gmail.com

Inflammation is a complex host (systemic/local) response to a wide range of tissue injury and infection, generally marked by increased levels of cytokines, cytokine receptors, adhesion molecules, immuno-regulatory factors and several other mediators. Cyclooxygenase-2 (COX-2) and inducible Nitric Oxide Synthase (iNOS) plays an important role in inflammation and thus they act as a promising molecular target for the treatment of many inflammatory diseases. Besides, other molecules like NF-kB, 5-LOX, PLA2 and STAT6 also plays a vital role in the inflammation pathways. *Anethum graveolens*, belong to the family *Umbelliferae*, it is used traditionally as a popular aromatic herb and spice that has a very long history of use going back to more than 5,000 years. Previous studies showed that *Anethum graveolens* has antimicrobial, analgesic, gastric mucosal protective, anti-secretory effects, smooth muscle relaxant, hyperlipidemic and many other effects. In Traditional *Siddha* literatures, this medicinal plant is mentioned as *Sadakuppai* and indicated for anti-inflammatory property. The present study was aimed to determine the anti-inflammatory activity of various secondary metabolites of *A. graveolens* L. using molecular docking method. The secondary metabolites of ethanol extract of *A. graveolens* seeds (EAGS) were identified by GC-MS. The 3D structures of secondary metabolites were downloaded from pubchem database and the 3D structure of target proteins were downloaded from PDB database. Docking studies were performed using MVD (Molegro Virtual Docker). Drug likeliness (ADME) property using Lipinski RO5 was also predicted. All the ligands were able to dock effectively and also form hydrogen bonds with the target proteins. Hence, it can be inferred that the phytochemicals present in EAGS was found to possess appreciable anti-inflammatory activity.

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OF10 | AN *IN-VITRO* STUDY OF THE ANTIOXIDANT ACTIVITY IN *ALANGIUM SALVIFOLIUM* WANG

Gowtham.P and Karthikeyan.J*
PG and Research Department of Biochemistry, Kongunadu Arts and Science College
GN Mills Post, Coimbatore 641 029

In the present study, the leaves of *Alangium salvifolium* were used for phytochemical extraction using water and ethanol and the extracts were subjected to quantitative and antioxidant studies. The presence of Alkaloids, flavonoids, phenols, and tannins have been revealed from primary phytochemical screening that showed increased contents of secondary metabolites as assayed using standard quantitative procedure. The antioxidants were assayed using well established methods that include the DPPH, Reducing power, ABTS, Nitric oxide radicals and hydroxyl radicals. The aqueous and ethanol extract of *Alangium salvifolium* showed the highest reducing ability. Total antioxidant activity was also found to increase in a dose dependent manner. The above findings indicate that *Alangium salvifolium* possess free radicles scavenging potential that can be exploited for the treatment of various free radicals mediated disorders.

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OF11 | DETECTION OF ESTRIOL USING SURFACTANT MODIFIED CARBON PASTE ELECTRODE: A CYCLIC VOLTAMETRIC STUDY

M. M. Charithra, J.G. Manjunatha*, C. Raril
Department of Chemistry, FMKMC College, Madikeri, Mangalore University Constituent College Karnataka, India.
manju1853@gmail.com

The electrochemical behaviour of Estriol (ET) was studied at a carbon paste electrode modified with Triton X-100 (TX-100) in 0.2 M phosphate buffer solution (PBS) by using cyclic voltammetry (CV) technique. The oxidation process was irreversible and modified electrode exhibited a good electrochemical activity towards the oxidation of ET compared to the bare carbon paste electrode (BCPE). The surface of the bare and modified carbon paste electrode (MCPE) was characterized by Field emission scanning electron microscopy (FESEM). The effect of anodic peak potential (E_{pa}), anodic peak current (I_{pc}), scan rate, pH, stability was studied. The anodic peak current varied with ET concentration in the range of 6×10^{-6} to 1.2×10^{-4} M with a limit of detection (LOD) 7.9×10^{-7} M and limit of quantification (LOQ) 2.6×10^{-6} M. Overall, the determination of ET was successfully achieved by CV technique.

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OF12 | TRANSCRIPTOMIC IDENTIFICATION, MOLECULAR CLONING AND IN-SILICO CHARACTERIZATION OF GLYCEROPHOSPHODIESTER PHOSPHODIESTERASE FROM *TRICHOGRAMMA CHILONIS* ISHII"

P. Niranjana[1]*, Ondara Zablon Kerima[1] Shivananda K. S[2] and P.Sharanappa[3]

[1]Department of Post-Graduate Studies and Research in Biochemistry, Kuvempu University

[2]Department of Post-Graduate Studies and Research in Biotechnology, Kuvempu University

[3]Department of Post-Graduate Studies and Research in Bioscience, P.G.Centre, Hema Gangothry Mysore University, Hassan - 573201

Trichogramma chilonis Ishii is an endoparasitic wasp widely used as a biological control agent against many agricultural pests. Using Illumina pair-ended sequencing platform, we generated and reported the first RNA-Seq of the adult *T. chilonis*. In total, 18,372,639 high-quality reads were generated and de novo assembled which resulted in 24,488 transcripts. To understand the functions of the transcripts, gene ontology, gene descriptions, and cluster of orthologous group annotations were performed against class Insecta in UniProt. A transcript, glycerophosphodiester phosphodiesterase (GD-PD), encoding a probable detoxification protein was identified and analyzed by molecular cloning and in-silico approaches. A full-length cDNA encoding GD-PD (957 bp) was isolated by gene specific primers and was found to have an open reading frame (ORF) encoding a protein with 318 amino acid residues. The GD-PD gene was cloned into a TA vector, transformed to *E. coli* DH5α cell and verified by sequencing. A suitable template was searched by invoking BLAST search of the sequence against PDB and suitable models were generated using different servers. Further quality of the models was assessed using RAMPAGE, ERRAT, PROCHECK and QMEAN online servers. The best model was selected based on Ramachandran Plot. Molecular dynamic (MD) simulation was carried out to explore the quality of the model structure, by checking its stability via performing 5Å simulations. For docking, monocrotophos compound was obtained from PubChem and suitable binding sites in the GD-PD were searched by a CASTp server. The compound was docked to the enzyme and resultant high binding affinity was visualized in Pymol viewer. This characterization may help to offer insights into the nature and dynamics of the interaction of this enzyme with its synthetic inhibitors.

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OF13 | DRUG DISCOVERY FROM PLANTS

Pratibha
Research Officer, Bangalore

Development of Drugs in Indian medicine (Ayurveda) and modern medicine have followed similar path in the recent past. Isolation of the molecules, compounds and active components responsible for the curative effect, selection and study of plants already known to have health benefits in ethno medicine and ethno botany and clinical trial based confirmatory studies of Ayurvedic medicines/treatment techniques, evidence-based medicine and integrative medicine are the common approaches for development / patenting / registration of drugs and medicines. Except a small number of medicines used in Ayurveda based on metals, minerals and products from the ocean (corals, shells and planktons) majority of Ayurvedic remedies are plant based. A large number of medicines currently in use in modern medicines are also plant based. Drug weariness, resistance of disease causing virus and bacteria, search for new and more effective remedies are prompting medical research for new pharmaceutical and phytoceutical products. It is proposed to present an analysis of the trends, potential in drug discovery, the constraints and implications for biodiversity.

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OF14 | ANTIDIABETIC AND ANTIOXIDANT ACTIVITY OF *RUBUS STEUDNERI* SCHWEINF. AND *RUBUS APETALUS* POIR. LEAF EXTRACT ON ALLOXAN INDUCED DIABETES MELLITUS

Raghavendra HL[1,4], Vadlapudi Kumar[2], Manjula Shantaram[3], Calderon IMP[4], Rudge MV[4] and Barbosa AMP[4]

[1]Department of Biochemistry, School of Medicine, Wollega University, Nekemte, Ethiopia.

[2]Department of Biochemistry, Davangere University, Shivagangothri, Davangere577002, [3]Department of Studies and Research in Biochemistry, PG Centre, Mangalore University, Jnana Kaveri, Chikka Aluvara, Kodagu, Karnataka, India

[4]Department of Obstetric and Gynaecology, Faculty of Medicine, UNESP, SP, Brazil.

Chronic hyperglycemia in diabetes determines the overproduction of free radicals, and evidence is increasing that these contribute to the development of diabetic complications. In the present study, we investigated the antidiabetic and antioxidant activity of *Rubus steudneri* Schweinf and *Rubus apetalus* Poir leaf extract on alloxan induced diabetic rat model and the results were compared with standard Glibinclamide (5 mg/kg). Leaf extract at a dose of 150 and 300 mg/kg given orally for 28 days and the rats treated with 300 mg/kg of extract showed significant ($p<0.05$) hypoglycemic activity and all the groups significantly ($p<0.001$) decrease the levels of total cholesterol (TC), triglyceride (TG), low density lipoprotein (LDL) and very low-density lipoprotein (VLDL) with increase in high density lipoprotein (HDL) and diminution of atherogenic index. Furthermore, PCC significantly increases the activities and levels of superoxide dismutase (SOD), catalase (CAT) and glutathione (GSH) and decrease in lipid peroxidation (MDA) in both doses showed the antioxidant activity of the extracts. All the results were compared to the diabetic control group and diabetic control group results were compared with normal control. In histological investigations, the hypoglycemic and antioxidant activity of this extract is comparable to that of glibenclamide. Leaf extracts treatment protected the majority of the pancreatic islet cells, liver cells from hepatocellular necrosis and kidney from bowman‘s space hemorrhage with respect to the control group. Treatment with different doses of leaf extract significantly reduced hyperglycemia and oxidative stress and augmented the antioxidant system.

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OF15 BRONCHODILATORY EFFECT OF SIDDHA HERBOMINERAL PREPARATION NARPAVALA CHUNNAM ON OVALBUMIN INDUCED BRONCHIAL ASTHMA IN WISTAR ALBINO RATS

R. Rathinamala[1], M. Murugesan[2] and A. Rajendra Kumar[3]

[1,3]Research Officer (Siddha), Siddha Regional Research Institute (Under CCRS), Kuyavarpalayam Puducherry, Pin code- 605013.

[2] Former Dean, National Institute of Siddha, Chennai, Tamil Nadu, Pin code 600 047.

drrmala@gmail.com

Siddha is a traditional medical system of Tamil which is associated with Dravidian culture. *Siddha* Materia Medica categorized into *Mooligai* (plant products), *Thathu* (metals and minerals) and *Jeevam* (animal products). But it depends largely on metals and mineral formulations, since they have a better efficacy than herbal drugs. Bronchial asthma is a serious non-communicable disease, and India has an estimated population of 15-20 million asthmatics. Narpavala chunnam is a higher ordered dosage form in Siddha, which is prepared from mineral drug Pavalam i.e Coral. It is indicated for the management of tuberculosis, bronchial asthma, cough and jaundice. This study was planned to evaluate the efficacy of Narpavala chunnam in ovalbumin induced lung damage in Wistar rats. The animals were divided into different groups and lung damage was induced by intra peritoneal injection of alum ovalbumin mixture followed by exposure of 4% ovalbumin. The broncho alveolar lavage (BALF) was collected and analysed for total protein, TC and DC. The lung damage was also assessed by the histopathological study. Different doses of NPC treated animals showed statistically significant decrease in TC and DC compared to OVA-challenged animals. In histopathology, infiltration of inflammatory cells was found to be more in the OVA aerosol group compared to other groups. Hence, it is concluded that Narpavala chunnam is very effective against OVA induced lung damage in Wistar rats

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OF16 | EVALUATION OF WOUND HEALING ACTIVITY OF THE WHOLE PLANT EXTRACT OF *MOLLUGO CERVIANA* (L.)

P. Padmapriya and S. Maneemegalai*
Department of Biochemistry
Bharathidasan University Constituent College for Women, Orathanadu-614625
Tamil Nadu, India
maneemegalai@gmail.com

Wound is defined as the disruption of the cellular and anatomic continuity of a tissue. Wound healing is a normal biological response of the body to injury and it is a complex physiological process comprising of four distinct and sequential stages. Wound healing agents are topical applications in the form of ointment, cream or in the form of lotion prescribed in treating wounds. Plant based wound healing agents are widely preferred in wound care due to their clinical efficacy, availability and affordability. Excision wound model studies are normally preferred to study the percentage of wound contraction and period of epithelisation. *Mollugo cerviana*, an herbal weed belongs to the family of Molluginaceae known by the name ―Parpadakam‖ in Tamil and conventionally used in treating wounds and inflammation was the plant under this research. The ethanolic extract of *Mollugo cerviana* was evaluated for its wound healing activity in excision wound model. Wistar Albino Rats (*Rattus norvegicus*) of either sex were the experimental animals used in this study. The study comprises of three groups and each group comprising of six animals. Povidone Iodine ointment is taken as the standard drug and the test comprises of ethanolic extract of *Mollugo cerviana* as 10% ointment and a common control. The percentage of wound contraction is calculated from the periodical measurement of wound area on post wounding days after creation of excision wound in the experimental animals. The biochemical parameters such as hydroxyl proline, hexosamine, hexuronic acid levels, protein and DNA content in the granulated tissues were also estimated. The results revealed an effective wound healing activity shown by the ethanolic extract of *Mollugo cerviana* in treating wounds slightly less than the standard drug.

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OF17 | COX2 INHIBITORS: EVALUATING THE SCREENING BEDROCK

H. S. Santosh Kumar and Pooja N.
Department of Biotechnology, Bioscience Complex, Kuvempu University, Jnanasahyadri Shankaraghatta – 577451, Karnataka, India

Screening for anti-inflammatory activity of phytochemicals has been talk of the town as evident from the reports in the public domain. It is noteworthy that, most of the times the phytochemicals are compared with Cyclooxygenase (COX) inhibitors. The two COX isoforms COX-1 and COX-2 are the targets of the widely usednonsteroidal anti-inflammatory drugs, indicating a role forthese enzymes in pain, fever, inflammation, and tumorigenesis. Non-steroidal anti-inflammatory drugs (NSAIDs) are the competitive inhibitors of cyclooxygenases. However, most of thephytochemical screening is done against standard drug (either Diclofenac or Indomethacin) randomly without the knowledge of physicochemical property of bioactive compound under investigation. Some reports have the result of comparative anti-inflammatory activity of crude extract followed by structural characterization of pure compound from the same extract but no reference to activity of pure compound.Recent reports have also availed the computer assisted simulation of pharmacodynamics of ligand with the target enzyme.The present study uses computational approaches to analyse the ligand dataset for their druglikeliness and safety followed by simulation of their binding ability. Data was collected using literature in public domain. The compounds were analyzedfor druglikliness, biological activity and molecular docking were done. Our results show, only 23.07% of true positive ligands.53.85% of false negative, 15.38% of true negative and 7.70% of false positive reporting of the ligands. The present study clearly shows the paradox of current screening bedrock and advantage of cheminformatic studies to design and screen the ligand against appropriate standards.

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OF18 | BIOACTIVE POTENTIAL OF COW URINE FROM TWO INDIGENOUS CATTLE BREEDS OF SOUTHERN INDIA- AN *IN VITRO* STUDY

Devadiga Anitha Govinda[1], Srujana M. G.[1]and Sharath Chandra K.[2*]

[1]Department of Studies in Biosciences, Mangalore University, Mangalagangothri, Dakshina Kannada, Karnataka.

[2]Department of Botany, Canara College, M. G. Road, Mangalore- 575 003, Dakshina Kannada, Karnataka.

sharathkodandoor@gmail.com

Cow urine has been elaborately explained in Ayurveda as an effective medicinal substanceof animal origin with innumerable therapeutic properties. From the ancient timeit has been used as a medicinal resource which can used against bacterial, fungal/viral infections, leprosy, ulcer, heart disease etc. Hence the present study was undertaken to evaluate various bioactive substances present in the two indigenous cattle breeds of Southern India such as Deoni and Kasaragod Dwarf. In the study cow urine samples of various kind viz., fresh, photo-activated and sterile urine samples were selected.Preliminary phytochemical screening ofurine samplesshowed the presence of tannins, flavonoids, alkaloids, terpenoids,saponins, steroids,cardiac glycosides and phenolic compounds in them.The physico-chemical properties of urine samples showed pH in the alkaline range; conductivity ranged between 2.0 - 6.0 mS, total dissolved solids between 0.9 - 2.0 ppt and salinity between 0.4-2.5ppt. In the study, non-enzymatic antioxidants such as phenolics, flavonoids and tannins where found to be in better range in raw and photo-activated samples of Deoni breed; while flavonoids were high in Kasaragod dwarfbreed. *In vitro* screening for antioxidant activity of urine samples was determined.The antioxidant capacity in sterile and photo-activated samples of Kasaragod dwarf was noticed in higher range than Deoni samples. The mineral profiling of the samples was determined

using SEM-EDS method. The FTIR analysis of the dried urine samples showed the presence of characteristic absorption bands indicating various classes of active functional groups like hydrocarbons, oxygen compounds, nitrous oxide and carboxyl groups in them. The study showed potent antibacterial potential in ethanol extract of two cattle breed urine samples by exhibiting better MIC values against bacterial strains *Staphylococcus aureus* and *Klebsiella pneumoniae.* The study also noticed good antifungal property of the urine samplesagainst fungi namely, *Candida albicans*and *Neurosporacrassa.* The study is a contribution towards the validation of cow urine as a source of bioactiveagent.

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OF19 | ANTIOBESITY EFFECT OF *PIPER NIGRUM AND ZINGIBER OFFICINALE* (MIXED-EXTRACT): AN EXPERIMENTAL STUDY.

Sunil Kharge[1], A. Y. Mane[2], Prakash Zende[2]

[1, 2] Department of Biochemistry, Prakash Institute of Medical Sciences & Research, Urun-Islampur 415409 (MH)

Introduction: Present study was planned to know the antiobesity effect of mixed aqueous extract of *Piper nigrum* (PN) and *Zingiber officinale* (ZO) in high fat diet (HFD) induced obesity in albino rats. Phytochemical analysis was done separately on each aqueous extract. Alkaloids, saponins, tannins, phlobatanins, anthrax quinones & cardenolides were found in both plants where as cardiac glycosides, steroids & terpenoids were absent. Materials: 40 albino rats were randomly distributed into four groups (A-D) of ten albino rats each. All were fed with high fat diet (HFD) & water ad libitum. Group A was negative control group. Group D was positive control group treated with Orlistat (tab. Obelit, 120 mg/kg body weight/ day). Group A and D were not administered any extract of PN & ZO, whereas Group B and Group C were test groups, treated with mixed aqueous extract (PN & ZO) at 400 mg/kg body weight & at 800 mg/kg body weight respectively for 42 days. Observations and results: The result showed that the treatment with mixed aqueous extract of ZO & PN at a dose of 800 mg/kg body weight successfully reduced the elevated body weights more than dose of 400 mg/kg body and that of Orlistat. Conclusion: These findings showed that, mixed aqueous extract herbs like PN & ZO may be useful in future as a compound for development of new drug for obesity, after clinical trials.

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OR01 | GENTAMICIN SULFATE LOADED COVELLITE NANOPARTICLES: BIOSYNTHESIS, CHARACTERIZATION AND BIOCOMPATIBLE EVALUATION TOWARD CLINIC BACTERIAL ISOLATES

Abishad P.M.[A], Namratha K.[b] Srinath B.S.[c] and Byrappa K.[*d]

[a,b,d,]Center for Material Science and Technology, Vijnana Bhavan, University of Mysore, Karnataka, India

[c,a,]Department of Studies and Research in Microbiology, Mangalore University, P.G.Center, Karnataka, India

[d]Adichunchanagiri University, N.H.75, B.G. Nagara, Mandya District - 571448

[*]kbyrappa@gmail.com

Nanotechnology holds an important area in recent research due of its immense use in the different field of sciences. The small size, large surface area, orientation, and physical properties make them appropriate to be used in medical sciences, physics, and chemistry. To synthesize covellite nanoparticles, The formation of nanoparticles was first screened by measuring the surface plasmon resonance (SPR), Furthermore, the structural, morphological, elemental and functional characterization of Covellite NPs was carried out using the X-ray diffraction (XRD), SEM, AFM, FTIR spectroscopy, TGA-DTA analysis, and EDAX respectively. The biological approaches to preparing nanoparticles have drawn the attention of researchers due to eco-friendly nature, low cost, and easier steps for synthesis. FT-IR analysis and AFM study indicated that the Gentamicin sulfate

could effectively load into covellite NPs. Meanwhile, the dosage of covellite NPs would affect the drug loading and entrapment efficiency of GS as well as increase the antibacterial effect of Gentamicin loaded covellite NPs.

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OR02 | Potency of actinomycetes against multidrug resistant bacteria

Ali Mohammed Abdullah Bawazir[*1] and Manjula Shantaram[2]

[*1]Department of Microbiology, Mangalore University, Post Graduate Centre, Chikka Aluvara Kodagu, Karnataka, India.

[2]Department of biochemistry, Mangalore University, Post Graduate Centre, Chikka Aluvara, Kodagu Karnataka, India.

amamb77@gmail.com

The combat continues between antibiotics and resistant bacteria and hence, antibiotic resistance is a problem that continues to challenge the scientists and healthcare sector. In particular, multidrug resistance is now widespread in familiar pathogens such as *Staphylococcus aureus* and *Bacillus subtilis* as well as *Escherichia coli* and *Pseudomonas aeruginosa*. In our study, the soil samples were collected from some different sites of Hadhramout - Yemen Governorate viz., dams, Caves Mountains and agricultural fields to investigate the diversity of actinomycetes. A total of two hundred and nineteen actinomycetes strains were isolated and, screened for their anti-bacterial activity based on their color and activity against bacterial pathogens. Twenty isolates have shown activities against pathogenic bacteria. From two hundred and nineteen actinomycete isolates, one hundred and three isolates were selected for investigation according to their color and activity against pathogenic bacteria. Thirty-four isolates (33%) have shown activity against *B. subtilis* by ADD (Agar Disc Diffusion) and 15 isolates (15%) by AWD (Agar Well Diffusion). For *S. aureus* 30 isolates (29%) had activity by ADD and 11 isolates (11%) had activity by AWD. There were 35 isolates (34%) have shown activity against *P. aeruginosa* by ADD and 15 isolates (15%) by AWD. The activity was low against *E. coli*, only 24 isolates (23%) showed activity by ADD and 10 isolates (10%) by AWD. Most of the isolates inhibited growth of tested Gram negative and Gram-positive bacteria. Isolation of actinomycetes from different environments like dams and caves are important for isolation of new antibiotics which contributes for treatment of several diseases. Some of them have more activity such as 34 mm inhibition zone against *Pseudomonas aeruginosa* which is resistant to most antibiotics.

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OR03 | EFFECT OF YOGIC INTERVENTION ON SERUM LIPID PROFILE AND OXIDATIVE STRESS IN OBESE ADULTS

Balakrishna Shetty[1], Manjula Shantaram[2], Geetha B. Shetty[3]

[1]PhD Scholar, Department of Biochemistry, SDM College of Naturopathy and Yogic Sciences, Ujire Karnataka, India.

[2]Professor & Director I/C of PG centre, Mangalore University, PG Centre, Jnana Kaveri, Chikka Aluvara, Kodagu

[3]Professor and Dean, Department of Physical therapeutics & Nutrition, SDM College of Naturopathy and Yogic Sciences, Ujire, Karnataka, India.

Background Obesity is a chronic medical condition results from excess accumulation of fat producing adverse effect on health and it is associated with chronic low-grade inflammation with increased oxidative stress (OS). Over-expression of oxidative stress damages cellular structures leading to the development of obesity-related complications. Practice of *yoga* has shown decrease in oxidative stress in diabetes mellitus and other chronic diseases. So, the aim of this study was to find out the effect of yoga on oxidative stress in obese adults. Materials and Methods: A total of 124 subjects, of which 59 males (age 28.9±3.0) and 65 females (age 31.2±3.1) with BMI, ≥25 to ≤40 were recruited for the study. The serum lipid profile, malondialdehyde (MDA) and total antioxidant status (TAS) were assessed at

1st day (Pre), at the end of 3 months (post-1) and 6 months (post-2) of yoga intervention. Results: The data obtained was analysed by ANOVA for repeated measures has shown significant changes in body weight ($p>0.05$), BMI ($p>0.001$), HDL cholesterol ($p>0.05$), LDL/HDL Cholesterol ($p>0.05$), serum total antioxidant capacity ($p>0.05$) and MDA ($p>0.05$) of both the genders and LDL cholesterol ($p>0.05$) in males following yoga intervention in obese adults. Mann-Whitney test performed to see the difference across the gender indicates significant changes between the genders in body weight, BMI, MDA and TAS when pre-assessment values compared with post-2 following yoga interventionConclusion: Reduction in the level of oxidative stress marker; MDA and improvement in TAS and serum lipid profile suggests that yogic practices may have therapeutic and protective effects on obesity by decreasing oxidative stress.

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OR04 | RESVERATROL MEDIATED ALTERATIONS IN HISTONE METHYLATION LEADS TO THE REACTIVATION OF P21, P53 AND BRCA1 EXPRESSION IN BREAST CANCER CELLS

Biji C, Krishna Ghosh, and Santosh R. Kanade
Department of Biochemistry and Molecular Biology, Central University of Kerala, Kasaragod, Kerala
bijicskl@gmail.com

Breast cancer is the second most aggressive and lethal cancer among women. Resveratrol was previously shown to induce expression of critical tumour suppressor genes (TSGs) including p21, p53 and BRCA1 which are generally downregulated in cancer. In the present study, we aimed to study the impact of resveratrol on the expression and function of oncogenic methyltransferases: PRMT5 and EZH2 which result in alteration of repressive histone marks. We observed 20 µM resveratrol significantly reduced cell viability, expression, and promoter activity of both PRMT5, and EZH2, and their catalytic histone modifications H4R3me2s and H3K27me3, in the ER^+ MCF-7 and triple negative MDA-MB-231 cells. Resveratrol also increased histone acetyltransferase (HAT) activity and KAT2A and KAT3B expression, with reduced pan-histone deacetylase (HDAC) activity and selective over expression of class I HDACs, that resulted in an increased level of acetylated 9th and 27th lysine residues in histone H3 (H3K9ac and H3K27ac). In quantitative real-time PCR of the chromatin immunoprecipitation experiment, it was confirmed that resveratrol dose-dependently reduced the enrichment of the H4R3me2s as well as H3K27me3 marks while increased that of H3K9ac and H3K27ac in the proximal promoter of p21, p53 and BRCA1. Finally, we hypothesised that resveratrol by suppressing PRMT5 and EZH2 enzymes reduced enrichment of repressive histone marks; while by inducing KAT2A/3B enriched the activating histone marks in the promoter of p21, p53 and BRCA1, resulting in their increased transcription culminating in cancer cell death. Therefore, a further illustration of these phenomena *in vivo* models could potentiate the cancer therapeutic efficiency.

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OR05 | ISOLATION OF BACTERIOPHAGES WITH POTENTIAL TO INACTIVATE PATHOGENIC VIBRIO PARAHAEMOLYTICUS FROM AQUATIC ENVIRONMENTS

Dilip Lakshman[1], Girisha Shivani Kallappa[1], Ajay S Khandagale[2], Mukesh Yannanguru Krishnappa[1] Nithin Muliya Sankappa[1], Puneeth Thadooru Goolappa[1]and Suresh Thangavel [1]
[1]Department of Fisheries Microbiology, College of Fisheries, Mangalore- 575 002, India. [2]Department of Biochemistry, College of Fisheries, Mangalore- 575 002, India.

The bacteriophages are ubiquitous in nature and exist in all the ecosystems where their specific host bacteria are also found. The discovery of bacteriophages is one of the most important milestones in the history of biomedical research-one that has led to many fundamental discoveries and break throughs in the life sciences. In this study, three lytic phages specific to *Vibrio parahaemolyticus* were isolated from clam sample, shrimp farm water and shrimp farm sediment samples and were

designated as VPP-2, VPP-5 and VPP-11 respectively by spot assay method. Confirmation, propagation and determination of phage titer were carried out by soft agar method. Comparison of protein profiles of isolated phages by SDS-PAGE revealed that bands produced were unique to each phage. VPP-2, VPP-5 and VPP-11 had a major band in the range of 70 kDa, 40 kDa and 35 kDa respectively. Morphology results by transmission electron microscopy assigned VPP-2 phage into Myoviridae family. Isolated bacteriophages were found to be broad host specific without cross reacting to non-Vibrios with VPP-2 having broad host range compare to VPP-5 and VPP-11. Storage stability studies of phages indicated that the titer of the VPP-2 and VPP-5 phages were almost relatively stable up to 60 days at different temperatures viz -80°C, -20°C, 0°C, 4°C, 20°C, 30°C, 37°C.

& 50^0C. But the phages were more stable between the temperature ranges of -80°C to 4°C compared to 20°C to 50°C temperature range. Chloroform stability test showed that VPP-2 was relatively stable in nature when compared to VPP-5 phages and VPP-11 was less stable than other two phages. This phages have many potential applications in human medicine as well as veterinary science, aquaculture and food processing.

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OR06 | EVALUATION OF ANTI-AGING EFFECTS QUERCETIN, A POLYPHENOL FLAVANOID IN D-GALACTOSE INDUCED AGED RATS

Ravichandra V.[1] Sriram B. S.[2], Rajendra Holla[3] [1]Associate Professor of Pharmacology, [2]Ph D Scholar,[3] Head of Pharmacology Department Dept. of Pharmacology, K S Hegde Medical Academy, Deralakatte, Mangaluru.

Aging is a risk factor for a number of diseases including cardiovascular diseases, dementia, diabetes and Parkinsonism. Though aging process cannot be stopped completely, it is possible to slow it and attain healthy aging. Lifestyle factors such as diet and exercise play an important role in healthy aging. Oxidative stress theory, the most accepted metabolic theory of aging postulates that oxidation induced damage to DNA, protein and lipid components of cells results in aging. Antioxidants in herbs therefore, may be helpful for healthy aging. Quercetin, a polyphenol belonging to the flavonoid group is richly found in apples and onions is having free radical scavenging activities. Quercetin due to its pro-oxidant properties can prove beneficial in healthy aging. Thus, we propose a study to evaluate neuroprotection potential of quercetin by behavioral studies in Wistar albino rats using Hebb William maze and Radial Maze apparatus. At cellular level, antioxidant properties and glycemic control will be compared with that of normal control and metformin, an oral antidiabetic drug useful in antiaging studies. At genetic level, telomere length will be compared with that of positive control of aging induced by D-galactose. Overall, the study will try to explore antiaging potentials of quercetin with other known methods for healthy aging such as diet and exercise.

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OR07 | CHEMICAL COMPOSITION AND HUMAN SECRETORY PLA_2 INHIBITORY ACTIVITY OF ESSENTIAL OIL OF *HERACLEUM SPHONDYLIUM* SEED FOR INFLAMMATORY THERAPY.

Giresha A.S[1], Sophiya P[1], Lohith N.S[1], Suhail A.R[2], Dharmappa K.K[1*]

[1]Dept of Biochemistry, Mangalore University, Jnana Kavery PG centre, Chikka aluvar, Kodagu karnata, India-571232

[2]Medicinal Chemistry Division, Dept of Chemical Sciences, CSIR-IIIM, Jammu, J& K, India-180001
dharmappa@gmail.com

Many inflammatory disorders exhibit elevated level of pro-inflammatory eicosanoids derived from arachidonic acid (AA) due to the concerted action of 5-lipoxygenase (5-LOX) and cyclooxygenase-2

(COX-2). Production of this arachidonic acid along with lysophospholipids is mainly mediated by key enzyme sPLA$_2$. Many NSAIDs used to treat inflammatory disorders available in market will cause many side effects. Bioactive compound that can inhibit this enzyme serves as source of potential anti-inflammatory drugs. In this study the essential oils isolated from *Heracleum sphondylium* seed were subjected for sPLA$_2$ inhibition as anti-inflammatory drugs. (1R)-2, 6, 6 Trimethylbicyclo [3.1.1] hept-2-ene, Caryophyllene, Caryophyllene oxide, tau-Cadinol and alpha-Cadinol are the major component of the oil. *H. sphondylium* seed oil significantly inhibited the catalytic activity of sPLA$_2$IIA (IC$_{50}$ 76.03µL) in vitro method, which is independent of substrate and calcium concentration. In addition, it also inhibited the sPLA$_2$IIA-induced edema in mice dose dependent manner. Injection of human inflammatory sPLA$_2$IIA (4 µg) into mouse hind paw resulted in swelling of the foot pad with an edema ratio of 170.56 ± 3.56% and reduced to 129.34 ± 3.12% at 20 µg) ($p < 0.0001$), when oil was co-injected with sPLA$_2$IIA. Further, the IC$_{50}$ values were found to be 68.8-112µL for anti-oxidant and lipid peroxidation activity shows. Thus, *H. sphondylium* seed oil modulates inflammatory responses by targeting sPLA$_2$ enzyme and prevent AA pathway along with good anti-oxidant activity.

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OR08 | AN *IN-VITRO* STUDY OF THE ANTIOXIDANT ACTIVITY IN *ALANGIUM SALVIFOLIUM* WANG

Gowtham.P and Karthikeyan.J*

PG and Research Department of Biochemistry, Kongunadu Arts and Science College

GN Mills Post, Coimbatore 641 029

gowthamp419@gmail.com

In the present study, the leaves of *Alangium salvifolium* were used for phytochemical extraction using water and ethanol and the extracts were subjected to quantitative and antioxidant studies. The presence of Alkaloids, flavonoids, phenols, and tannins have been revealed from primary phytochemical screening that showed increased contents of secondary metabolites as assayed using standard quantitative procedure. The antioxidants were assayed using well established methods that include the DPPH, Reducing power, ABTS, Nitric oxide radicals and hydroxyl radicals. The aqueous and ethanol extract of *Alangium salvifolium* showed the highest reducing ability. Total antioxidant activity was also found to increase in a dose dependent manner. The above findings indicate that *Alangium salvifolium* possess free radicles scavenging potential that can be exploited for the treatment of various free radicals mediated disorders.

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OR09 | IDENTIFICATION AND CHARACTERIZATION OF TRYPSIN SPECIFIC PROTEASE INHIBITORS FROM THE SEEDS OF UNDERUTILIZED LEGUME *"MUCUNA PRURIENS"*

Jafar Khaliq Lone, M A Lekha, Fasil Ali, Rajiv Bhardwaj, K S Chandrashekharaiah*

Department of Biochemistry, Mangalore University, Jnana Kaveri Campus, Chikka-Aluvara, Kodagu-571232, Karnataka, India.

kschandraks@gmail.com

Protease inhibitors were isolated and purified by employing conventional protein purification techniques such as Salt fractionation, Ion exchange chromatography on CM Cellulose and Gel filtration chromatography on Sephadex G-75. The gel filtration purified inhibitor was designed as Mucuna Protease Inhibitor Fraction (MPIF). The purified MPIF showed specific inhibitory activity of 1128 U, fold purity28.76 and the yield obtained was 0.258%. The purified MPIF showed four inhibitory peaks on LCMS designed as MPIF-α, MPIF-β, MPIF-γ and MPIF-δ with a mol. weight of

20kDa, 21.3kDa, 21.5kDa and 23kDa respectively. The presence of different inhibitors in MPIF was further confirmed by Ion-mobility. The purified MPIF was found to be heat stable and retain more than 70% inhibitory activity at 60°C. The purified MPIF was acid stable and found to have optimum pH 7.4. The zone of inhibition was observed for *B. subtilis*, *Pseudomonas aeruginosa* and *E. coli*.The inhibitory activity of MPIF against these bacterial protease could suggest that it has antibacterial activity. This study suggests that it can be developed as a potent antibiotic.

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OR10 | EVALUATION OF PHYTOCEUTICALS IN *COLOCASIA ESCULENTA*

Jyothi R.[1]and K.M. Srinivas Murthy[2]
Research scholar, Departmentof Microbiology and Biotechnology, Bangalore University, Bengaluru
[2]Associate professor, Department of Microbiology and Biotechnology, Bangalore University
paps_20052005@rediffmail.com

India has a vital contribution to the field of medicine through the ayurvedic system during vedicperiod. Accordingly, many plants play a major role as a reservoir of bioactives in treating variousailments. One of the classic examples being *Colocasia esculenta, which* is an herbaceous perpetual plantbelonging to Araceae family with _taro as its common name. It can grow up to a altitude of 2 m with adventitious and shallow root system arising from the corm, a engorged underground stem containinghigh levels of fine starch Corms are usually cylindrical and are variable in colour, size and shape. The leaves are long, broad and are borne in crowns at the end of upright, thick, succulent, high petioles. The tubers contain amino acids and are rich in starch and the juvenile leaves of this plant are rich in Niacin, Riboflavin and Vitamins such as B1, B2, C. Since the term phytoceutical is used for plant products that are active on biological systems, the pharmacological importance of plants has been gaining importance due to its fewercost and least adverse effects. Also the Modern clinical drugs focus on the use of natural extract‘s which possess the presence of phytoactive such as Alkaloids, Glycosides, Proteins, fats etc.As *C. esculenta* possess various medicinal values, it has been used as edible plant since ancient times in India.To understand its role in the field of therapeutic importance, the current studies have been undertaken to evaluate some of the phytoceuticals in*Colocasia esculenta*and understand its significance as a prominent healthcare plant.

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OR11 | DESIGN OF A NOVEL ANTI-CANCER COMPOUND DERIVED FROM THE IN I I POCON INO“JN– THEHERBAL MEDICINAL PLANT OF NORTH-EAST INDIA

K. Mohan[1*], H. Carehome Pakyntein[2], Atanu Bhattacharjee [3]and D. Velmurugan[1]
[1]CAS in Crystallography & Biophysics, University of Madras, Guindy Campus, Chennai.
[2]Pakyntein Indigenous Herbal Medicine and Research, WestJaintia Hills, Jowai, Meghalaya.
[3]Department of Biotechnology and Bioinformatics, North-Eastern Hill University, Shillong.

Jabung is the local name for the rhizome of *Stephania hernandifolia*, used as a traditional medicine for the treatment to cure cancer in the tribal area of Meghalaya, north-east India. The potential curing action of various types of cancer treated with this rhizome led us to undertake a thorough study of this herb to identify the major phytochemical constituents present in the rhizome. The present study leads to the identification of a major phytochemical namely, DL-Tetrahydropalmitine (THP) of molecular mass 355Daand its hydroxylanalogue (Stepholidine) present in the trace level from the different polar solvent extracts of Jabunganalysed through HPLC, LCMS and LCMSMS analysis. In addition to this compounds, the other anti-cancer compounds like Diethylstilbestrol andCorbisterol are also present

along with some anti-inflammatory compounds. Cell-line studies showed that THP has anti-cancer activities with respect to colorectal, lung and breast cancer cell-lines. Perceptible results were obtained when we subjected the identified THP and its hydroxyl analogues in the *in-silico* analysis using the breast cancerrelated protein target with PDB ID: 5NZP. During the induced-fit docking analysis, the Glide energy score showed that the molecular interactions were found to be in the increasing order, when the stimulation was done with the replacement of methoxy group with hydroxyl group one by one in the identified structure THP. The results led us to design a novel anti-cancer compound (the two methoxy groups of Stepholidine being replaced by hydroxyl groups by replacing the entire four methoxygroups with hydroxyl groups of THP.This newly designed compound with molecular mass 299Da was synthesized from the tetrahydropalmatine isolated from the extract of Jabung through chemical synthesis and completely characterized though LCMS and LCMSMS analysis. The work on cell-line studies is being carried out for this new compound.

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OR12 | PHYTOCHEMICAL CHARACTERIZATION OF OYSTER MUSHROOM *PLEUROTUSSAPIDUS* – AN UNEXPLOITED MEDICINAL MUSHROOM

[1]Karthik Mahadevan and [2]Krishnakumari Shanmugasundaram [1]Ph.D Research Scholar, [2]Assocciate Professor Department of Biochemistry, Kongunadu Arts and Science College, Coimbatore – 641029, Tamil Nadu, India

Mushrooms have been treasured all through the globe as food and medicine for thousands of years. In countries, such as China, India, Japan and Korea, medicinal mushrooms have a long history of use in traditional folk medicine for treatment of various diseases. The preliminary screening of phytochemicals is a valuable step, in the detection of the bioactive principles present in mushroom and subsequently may lead to drug discovery and development. The genus *Pleurotus*comprise about 40 different species that are commonly referred to as ―Oyster mushroom‖, it is fast growing fungus belongs to basidiomycota group and considered as one of the famous species with many health benefits. In the present study, Qualitative analysis of primary and secondary metabolites of *Pleurotussapidus*in eight different solvents such as Hot aqueous, Cold aqueous, Ethanol, Methanol, Chloroform, Petroleum ether, Ethyl acetate and Acetone were studied. The resultsrevealed that the presence of alkaloids, flavonoids, phenols, tannins, steroids, carbohydrates, protein, crude fiber, amino acids and fat. Quantitative analysis of Primary and secondary metabolites such as proteins, carbohydrates, and total free amino acids, alkaloids, phenols, tannins and flavonoids in hot aqueous extract of *Pleurotussapidus*were investigated. The bioactive compoundsof *Pleurotussapidus*possess anticancer, antimicrobial, antidiabetic, antidiuretic and anti-inflammatory activities.

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OR13 | ALPHA GLUCOSIDASE INHIBITORS ISOLATED FROM MEDICINAL PLANT FOR TREATING TYPE 2 DIABETES

Kirana M. P. and Ananda K.*

Biological Sciences, Poornaprajna Institute of Scientific Research, Devanahalli, Bangalore 562164.

ananda@poornaprajna.org

Alpha glucosidase enzymes are the enzymes which located on the brush border surface membrane of the small intestinal cells, takes part in the last step of starch digestion. These enzymes catalyze the hydrolysis of α 1-4, glucosidic bonds in oligosaccharides and there by releasing absorbable monosaccharides i.e. simple sugars. In diabetic patients, this mechanism leads to a symptom called postprandial hyperglycemia. Hence, the partial inhibition of alpha glucosidase enzymes expected to regulate the blood glucose homeostasis in patients with type 2 diabetes whenever they consume starchy food. The present study is focused on isolation of alpha glucosidase inhibitors (AGI) from Simarouba glaucaas a potent anti-diabetic compound. The extracts were prepared from dried leaf using different polar and nonpolar solvents and screened for AGI activity. The ethanol crude extract

showed excellent inhibitory activity against yeast alpha glucosidase enzyme with an IC_{50}value 0.5±0.04µg/mL which is better than the standard drug acarbose. The ethanol crude extract was purified by silica gel column chromatography and active fraction was collected. Total phenolic content, flavonoid content and antioxidant (DPPH and ABTS) activity of both crude extract and purified fraction was determined. The inhibition kinetics of purified fraction revealed, the inhibitors are of mixed type on alpha glucosidase enzyme. The UV-Visible, FTIR and LC-MS spectroscopy were carried out to detect the possible active compounds. The purified AGI active fraction was subjected to HPLC-Q–TOF-MS analysis and four compounds were identified for the first time in this plant. Furthermore, *in-silico* studies have been performed for the identified compounds against yeast alpha glucosidase enzyme.

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OR14 | THE GENOME GUARDIAN NEGATIVELY REGULATES DNA METHYLTRANSFERASE 1 MODULATED BY ENVIRONMENTAL CHEMICALS

Krishna Ghosh, Biji Chatterjee, Santosh R. Kanade Department of Biochemistry and Molecular Biology, Central University of Kerala, Kasaragod, Kerala

Understanding the regulatory mechanisms of expression of DNA methyltransferase 1 (DNMT1) under the influence of environmental chemicals is critically important as DNMT1 expression is crucial for maintenance of DNA methylation. We have undertaken this study to delineate the regulatory role of p53 (which often is a target of such chemicals) in regulating the transcription of DNMT1 using *in vitro* models. The preliminary observations showed that the chemicals bisphenol A (BPA), di-2-Ethylhexyl phthalate (DEHP) and 4-nonylphenol (4-NP) repress p53 while curcumin (Cur) and resveratrol (RVT) restores p53 in MCF-7 breast cancer cells which also coincides altered cell viability and DNMT1 expression. Using the MatInspector tool we predicted p53 binding site close to the transcription start site (TSS) of DNMT1 and then confirmed the binding of p53 within this site with ChIP. We found in the presence of BPA, DEHP and 4-NP, the diminished level of p53 aided the upregulation of DNMT1, as the DNMT1 promoter site of p53 was unoccupied. On the other hand, Cur and RVT restored p53 level, increased DNMT1 promoter occupancy by p53 and resulted in downregulation of DNMT1 expression. Furthermore, the cells which carry wild-type p53 and cells with mutant p53 were transiently transfected with plasmid carrying wild-type full-length p53 (pEGFP-p53) and subsequently the expression of DNMT1 was analyzed. We also confirmed the regulatory role of p53 by exposing cells to pifithrin (a specific p53 inhibitor) and a p53 activator drug (PRIMA-1), on the p53-positive/pEGFP-p53 transfected MCF-7 cells. Taken together, we observed that p53 and DNMT1 with the p53 binding site in its promoter share an inverse relationship in our model. Therefore, crosstalk between p53 and many DNMT1 as we report in the present study can be mechanistically established in future which will potentially have therapeutic applications.

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OR15 | ANTIBACTERIAL EFFECT OF DIFFERENT TYPES OF YEMENI HONEY ONSOME PATHOGENIC BACTERIA

Mohammed Ali Saeed and M. Jayashankar
Department of Studies and Research in Microbiology, Mangalore UniversityPost Graduate Centre Jnana Kaveri, Campus, Kodagu – 571232, Karnataka, India.
binabood11@yahoo.com

Honey has the ability to fight food-borne pathogens like *E. coli* and *Salmonella*, and other certain bacteria, including *Staphylococcus aureus* and *Pseudomonasaeruginosa*. The majority of the Yemeni honey varieties are characterized by low moisture content, in addition to the various flora of Yemeni plant, which may not be found in many countries, which makes them of high medicinal importance and high monetary value.

The antibacterial activity of four local Yemeni honey (SidrShabowah, SidrDaowany, SomorShabowah and MaraiyHodeidah honey) against Methicillin-resistant *Staphylococcus aureus* (MRSA), Methicillin-sensitive *Staphylococcus aureus* (MSSA), *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa*, were evaluated by well diffusion method, minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) values.In this investigation. The findings indicated that all honey samples had growth inhibitory effect and all tested gram negative and positive bacteria were sensitive to 7.5-80% concentrations. Sidr (Doawany and Shabwah) honey were more potent than SomorShabwah and MaraiyHodeidah honey in producing the inhibitory growth effect as an antibacterial agent. MIC of SidrDoawany honey was 15.0,7.5,20.0,7.50 (V\V %) and MBC was 20.0,10.0,40.0,10.0 (V\V %) for MRSA, MSSA, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa* respectively. While MIC of SidrShabwah honey was 15.0,15.0,20.0,15.0 (V\V %) and MBC was 20.0, 20.0,40.0,20.0 (V\V %) respectively for the tested microorganisms. MIC of SomorShabwah honey was 30.0,15.0,30.0,30.0 (V\V %) and MBC was 40.0,20.0,80.0,40.0 (V\V %) for MRSA, MSSA, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa* respectively. While MIC of MaraiyHodeidah honey was 30.0 (V\V %) and MBC was 40.0, 40.0,80.0,40.0 (V\V %) respectively for the tested microorganisms. In conclusion, Yemeni honeycould potentially be used as therapeutic agents against bacterial infection particularly to the tested microorganisms, and future experiments are in progress to evaluate the effects of Yemeni honey on bacterial resistance.

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OR16 | BETA HAEMOLYTIC VIOLET-PIGMENTED BACTERIA (*CHROMOBACTERIUM VIOLACEUM*) ISOLATED FROM FRESH WATER FISH PONDS

Nithin Muliya Sankappa[1], Kushala Kallihosure Boregowda[1], Puneeth Thaduru Goolappa[1], Ajay Sathyanarayana Khandagale[1], Sandya Chinna Rajesh [1], Suresh Thangavel[1] and Girisha Shivani Kallappa[1]

[1]Department of Fisheries Microbiology, College of Fisheries, Mangalore- 575 002, India.
ms.nithin@gmail.com

Genus *Chromobacterium*, belonging to Gram-negative coccobacillus, first described violet pigmented (due to the production of a non-diffusible pigment violacein) bacteria, are occasionally the causative agent of septicaemia in human and animals. *C. violaceum* found in soil and water, is normally considered non-pathogenic to human, but is an opportunistic pathogen of extreme virulence for human and animals. However, *C. violaceum* has recently emerged as an important model of an environmental opportunistic pathogen. Its high virulence in human infections and a mouse infection model involves the possession of several predicted virulence traits, including two type III secretion systems (T3SSs). It was mainly known as a producer of violacein and as a reporter for the discovery of quorum sensing molecules. In the present study, β- haemolytic violet-pigmented bacterium was isolated and biochemically identified as *C. violaceum* with molecular identification by 16s rDNA. Further, antibiotic assay revealed resistance for the several drugs. GART (Gnotobiotic *Artemia* Test) was performed which showed high mortality of Artemia fed with live *C. violaceum* indicating as a virulent strain when compared with the *Lactobacillus acidophilus*.

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OR17 | STUDIES ON ISOLATION AND BIOCHEMICAL CHARACTERIZATION OF COLLAGEN FROM FIN OFARABIAN SEAFISH INDIAN MACKEREL (RASTRELLIGERKANAGURTA)

Niveditha N. B[1], B.K. Sarojini[2]* and Avinash Kudva[3]

[1,3]Biochemistry Division, Department of Chemistry, [2]*Department of Industrial Chemistry Mangalore University, Mangalagangotri 574199, Karnataka, India. bksaroj35@gmail.com

Fish protein is an essential source of nutrient for many people, especially in developing countries

. Fish processing industry produces more than 60% by-products as waste, which includes head, skin

, trimmings, fins, frames and viscera, only 40% fish products are used for human consumption. Large quantities of fish by-product waste from fisheries create serious pollution and disposal problems in both developed and developing countries. These wastes contain good amount of protein rich materials that are normally processed into low market-value products. Research has been carried out in order to develop methods to convert these wastes into value added products. The proteins in fish can be divided into three groups of which collagen (30% of the total protein content of animal body) forms a major component of the connective tissue. There is a little information available regarding collagen isolated from Indian mackerel (Rastrelligerkanagurta). So, the present study is aimed at extraction and isolation of collagen from its finand characterization using UV, SDS-PAGE, FTIR, XRD and SEM. Collagen characterization using SDS-PAGE revealed that head collagen has type I collagen. From the FTIR spectra, four amide groups (Amide A, Amide I, Amide II and Amide III) were identified as major peaks.SEM result showed the fibrous nature of isolated collagenwith reference to the standard acid-soluble type I calf-skin collagen. The maximum solubility of ASC is observed at pH 4. A sharp decrease in solubility of ASC is observed at the NaCl concentration above 4%. It was found that a great amount of fish finwas dumped as waste, but the results showed that it is possible to use the fish finas an important collagen source.It has widespread applications in numerous fields such as pharmaceutical, medical, biomedical, food industry, cosmetics, etc.

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OR18 | ANALYSIS OF ANTIHYPERLIPIDEMIC EFFECT OF *TERMINALIA CHEBULA* IN HYPERLIPIDEMIC (DIET- INDUCED) MICE ADIPOSE TISSUE

S. Sarada[a], P. Parimala[b], E. Padmini*

[a&b]Research Scholar, [a]Bharathiyar University, Coimbatore, [b]Research Department of Biochemistry, Bharathi Women's College, Affiliated to University of Madras, Chennai *Principal, Government Arts and Science College, Perumbakkam,

parimalasaravanan285@gmail.com

BACKGROUND AND AIM: Hyperlipidemia, defined as the abnormal elevation in the level of lipid and lipoproteins in blood. This lipid overloading ultimately affects vascular system via plaque formation, thus hyperlipidemia represents the major risk factor for atherosclerosis, cardiovascular disease, etc. Hence the approach for the prevention and management of hyperlipidemia is of high demand. Since, available medications are mostly synthetic and causing adverse side effects, the focus of the researchers increased in investigating the medicinal value of traditional herbs and their products. Fruits of *Terminalia chebula* (commonly known as myrobalan), are one of the components of traditional ayurvedic herbal formulation ―triphala‖. Hypolipidemic activity of these fruits extracts was established from the distinct expression of serological markers. However the effect of the myrobalan fruit extracts are not so far explored in adipose tissue (AT) during hyperlipidemic condition. AT represents the major organ of storing excess fat and obesity is a major risk factor for hyperlipidemia. In addition, high fat diet (HFD), the diet used most commonly for obesity induction was employed for hyperlipidemia induction. Hence, the objective is to elucidate the efficacy of

myrobalan fruit extracts in mice AT during HFD induced hyperlipidemia. MATERIALS AND METHODS: Methanolic extract was prepared from dry powder of dried pulps of *T. chebula* fruits (test). Study involves 4 groups, GI- control (Normal fat diet + 0.5% CMC), GII- Hyperlipidemic (HFD + 0.5% CMC), GIII- standard (HFD + Gallic acid-50mg/Kg b.wt), GIV- test (HFD + *T. chebula*-250mg/kgb.wt). Hypolipidemic efficacy of myrobalan fruit extracts in AT was assessed by quantifying adipogenic (PPAR-γ, C/EBP-β), and antiadipogenic (leptin, TNFα) markers by specific ELISA kits. Simultaneously blood lipid profile analysis performed.RESULTS: It reveals that myrobalan fruit extracts imparts an excellent hypolipidemic effect depicted from decreased PPAR-γ, C/EBP-β and increased leptin, TNFα in AT of HFD induced hyperlipidemic mice. Altered lipid profile was observed. CONCLUSION: Polyphenols present in chebulic myrobalan fruit extracts exhibit an essential role in suppressing the lipid load in AT and the associated obesity disorder which may minimizes the risks of hyperlipidemia.

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OR19 | COM1 COMPOUND HAS A NEUROPROTECTIVE ROLE AGAINST ACRYLAMIDE-INDUCED NEUROTOXICITY IN WILD TYPE *D. MELANOGASTER* (OREGON K).

Pratap GK[1], Jafar Khaliq Lone[2], Suhail A. Rather[3] and Manjula Shantharam

[1,2,] Research Scholar, [4]Professor, Department of Studies in Biochemistry, Mangalore University, Post Graduate Centre, ChikkaAluvara, 571 232, Kodagu, Karnataka, India [3]Medicinal Chemistry Division, Chemical Sciences, CSIR-IIIM Jammu-180001

, Dept. of Studies in Biochemistry Mangalore University, PG Centre manjula59@gmail.com

Acrylamide is a water-soluble monomer which has broad application in different industries and also can form in food during heating process. This monomer is a potent neurotoxic and damages the central and the peripheral nervous system in humans and animals by inducing oxidative stress. Our interest was to evaluate the neuroprotection effect of isolated bioactive compound from a plant. COM1compound was isolated, purified which hasshown antioxidant, anti-microbial and anti-cholinesteraseactivities in *invitro* studies. *In vivo*neurotoxicstudy was carried out byusing six days' old flies (wild type *D.melanogaster).*Prior to exposure to acrylamide,flies were fed with cream-agar dietwhich comprisescontrol groupand second group fed with diet containing COM1 compound (0.1% and 0.2% w/v dissolved in 0.5% DMSO). Later, flies wereexposed to acute dose of acrylamide (30mM) soaked in 5%sucrose solution for 24 h and 48 h to check theneuroprotection against acrylamidewhichwas confirmed by histopathological studies and biochemical analysis. This shows that the bioactive compound COM1 has a good neuroprotective activity against acrylamide.

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OR20 | EFFECTS OF VITAMIN C SUPPLEMENTATION ON THE GLYCEMIC CONTROL AND CARDIOVASCULAR RISK IN TYPE II DIABETES MELLITUS- A RANDOMIZED PLACEBO CONTROLLED TRIAL

Praveen.D,*[1] Puvvada Ranadheer Chowdary,[1] Vijey Aanandhi M

*[1] Research Scholar, School of Pharmaceutical Sciences, VelInstitute of Science Technology and Advanced Studies, Chennai, India, praveennandan.

[2]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences Vels Institute of Science Technology and Advanced Studies, Chennai, India, hodpchemistry@velsuniv.ac.in

Diabetes Mellitus is a common metabolic disorder characterised by hyperglycaemia. It is evident that free radical release is characterised in Diabetes. The aim of this study is to establish the role of antioxidant vitamin ascorbic acid in the management of DM and reduction in cardiovascular risk. Methodology: A Randomized Controlled study has been carried out in a tertiary care hospital. A total of 150 patients has been included in 2 groups. Ascorbic acid is given to group A while group B received a placebo. Vitamin C, HbA1C, Cardiac markers and Framinghamscores are evaluated. Results: There is a well known deficiency of Vitamin C in patients with Diabetes. The FraminghamRisk score has been significantly reduced ($P < 0.05$). Similarly, the glycaemiccontrol also significantly brought under control. The intervention arm had showed significant marginal decline in the cardiovascular riskConclusions: Auto-oxidation and Glucose peroxidation is common in Type II Diabetes Mellitus.Hence Antioxidants help in overcoming such issues associated with Diabetes Mellitus.

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OR21 | *IN SILICO* AND *IN VITRO*EVALUATION OF QUINOLINE-BASED PHARMACOLOGICAL AGENTS FOR INHIBITING CANCER CELLS GROWTH

Praveen Kumar H.D.[1*], Venugopal Reddy Bovilla[3#], N. D. Satyanarayana[2#], SubbaRao V. Madhunapantula[3#]Santhosh Karanth[1#]Rajeshwara N. Achur [1#,]

[1]Department of Biochemistry, Kuvempu University, Jnana Sahyadri, Shankaraghatta, Shimoga Karnataka

[2]Department of Pharmaceutical Chemistry, Kuvempu University, Post Graduate Centre, Kadur Karnataka·

[3]CEMR Laboratory, Department of Biochemistry, JSS Medical College, JSS Academy of Higher Education and Research (Deemed to be University), Mysuru, Karnataka

Derivatives of quinoline (1-azanaphthalene), a heterocyclic aromatic nitrogen containing compound, are of great interest for many years since many natural and synthetic pharmacological agents have been derived from this backbone. The quinoline alkaloids are naturally found in Berberidaceae, Fumariaceae, Papavaraceae and Rutaceae. Prior studies have demonstrated the ability of quinoline derivatives for inhibiting cancer cell proliferation. Mechanistically, quinoline derivatives have been shown to inhibit oncogenic survival kinases, and topoisomerases thereby decrease proliferation, migration, angiogenesis, and induce apoptosis and autophagic cell death. Although many derivatives of quinolines have been explored previously, very few could reach clinical trials stage. Some of the reasons for their failure at different stages of drug development include (a) lack of therapeutic efficacy; (b) lack of selectivity to specific oncogenic kinases; (c) failure in animal models; (d) poor bioavailability and pharmacokinetic and dynamic properties etc. Therefore, in order to address these issues, we have synthesized a series of derivatives of quinoline and tested (a) their ability to bind to oncogenic kinases; (b) ADMET properties *in silico* and evaluated efficacy against normal and cancer cells *in vitro* using cultured cell lines. *In silico*, these synthesized quinolines exhibited better binding to mTOR (mammalian target of rapamycin; PDB ID: 4JSV). Furthermore, quinolines were subjected to ADME prediction and ADME properties for QpLogPo/w, QP LogHERG, QPPCaco, QpLogBB, QPlogKp, QpLogHSA, percentage oral absorption (in humans) and Lipinski's rule of five using QikProp.*In vitro*, the ability of Q1 to Q10 quinolines for inhibiting the growth of MDA-MB-468 (TNBC), HCT-116 (Colorectal carcinoma), A549 and HeLa cell lines was tested. Analysis of the *in silico* and *in vitro* data showed better efficacy of Q9 compared to other derivatives tested. Further *in vitro* and animal studies on Q9as a potential therapeutic candidateis in progress.

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OR22 | EVALUATION OF *IN-VITRO* ANTI-OXIDANT AND ANTI-CANCER ACTIVITIES OF *HOPEA PONGA* LEAF EXTRACT AND ITS SYNTHESIZED MANGANESENANOPARTICLES

Priyadarshini Shettar[1] and A. B. Vedamurthy[1]

1 Department of Biotechnology and Microbiology, Karnatak University, Dharwad

Aim: The green-synthesized Manganese nanoparticles (MnNPs) were produced rapidly by treating Manganese ions with an aqueous extract of *Hopea ponga* leaf. The reaction process was monitored

using UV-visible spectroscopy. FTIR spectra of plant extract and MnNPs are illustrated. The aim of the present study is to evaluate *in-vitro* antioxidant and anticancer activity of aqueous leaf extract of *Hopea ponga* and its synthesized MnNPs. Materials and Methods: Herbal extraction was carried out by Soxhlet extraction method with water as a solvent. The antioxidant potential of plant extracts and MnNPs were evaluated by FRAP, H_2O_2, DPPH and PM assays. The effect of aqueous extract of *Hopea ponga* along with its synthesized MnNPs on the viability of non-small cell lung cancer (A549) cells was determined by MTT assay. Results: The synthesized MnNPs showed significant antioxidant activity in all performed assays. The aqueous extract from leaves of *Hopea ponga* has strong dose dependent anticancer activity against non-small cell lung cancer cells A549.Conclusion: The present study successfully demonstrated the bioreduction of Manganese ions into MnNPs by aqueous leaf extract of *Hopea ponga*. This process was completely undertaken through green synthesis route in which synthesis of MnNPs is rapid and simple. The newly synthesized MnNPs showed significant antioxidant activity in all performed assays. Overall studies revealed that, aqueous extract from leaves of *Hopea ponga* has strong dose dependent anticancer activity against non-small cell lung cancer cells A549. Further studies are needed for detailed characterization of the toxicity and mechanism involved with antioxidant activity of these particles. In future these MnNPs can have promising potential applications in drug formulation and biomedical application.

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OR23 | ANALYSIS OF PHYTOTHERAPEUTIC VALUE OF PHYLLANTHUS ACIDUS FRUIT EXTRACTS

M. Kavitha[a], M. Radhika[b], E. Padmini[*]

[a&b]Research Scholar, [a]Bharathiyar University, Coimbatore, [b]Research Department of Biochemistry, Bharathi Women's College, Affiliated to University of Madras, Chennai [*]Principal, Government Arts and Science College, Perumbakkam, Chennai

mradhika282@gmail.com

Introduction and Aim: Cardiomyocytes are the most physically energetic cells, around 76% present in myocardium, involved in generating the force to pump blood in the heart by its coordinated contraction. Oxidative stress leads to apoptosis or necrosis of cardiomyocytes in cardiovascular diseases (CVD). CVD described as a silent infarct is one of the leading causes of deaths worldwide. Therefore, finding ways to reduce the mortality of CVD with medicinal plants possessing cardioprotective and cardiotonic activity remains an important health goal. Among the medicinal plants, *Phyllanthus acidus* has ample medicinal properties. It has been underutilized when compared to its close relative- *Phyllanthus emblica*. So far, no significant work has been done on cardioprotective effect of *P. acidus*. Hence, the present study was undertaken to evaluate the *in vitro* antioxidant potential and possible cardioprotective effect of *P. acidus* fruit extracts against H_2O_2 induced myocardial injury in H9C2 cells. Materials and Methods: Standard protocols were employed for DPPH radical scavenging assay, *in vitro* oxidative stress induction (H_2O_2) in H9C2 (mouse embryonic heart muscle cells); And determining the efficacy of pafae in stressed cardiomyocytes via ascertaining cardiomyocyte viability (MTT Assay), ROS production (DCFH2-DA) and cardiomyocyte damage (Troponin T). Results: The PAFAE showed the highest antioxidant potential as evaluated by DPPH radical scavenging assay than other extracts. Cell-viability assays revealed that both SA (25nm) and PAFAE (100ug/Ml) preserved the H9C2 cell-viability under oxidative stress induced by H_2O_2 (125µm). PAFAE was observed to be effective in decreasing ROS production and cardiomyocyte damage revealed from DCFH2-DA and Troponin T respectively. Conclusion: Results conclude that PAFAE owns essential phytochemicals which may induce the efficient radical scavenging activity, leading to suppression of ROS production and associated cardiomyocyte damage.

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OR24 |AN INSIGHT TO THE VASOREGULATORY EFFECT OF SQUID MANTLE EXTRACT DURING PREGNANCY INDUCED HYPERTENSION

E. Padmini[a], S. Ragini[b]
[a]Principal, [b]Research Scholar
[a]Government Arts and Science College, Perumbakkam, Chennai, [b]Research Department of Biochemistry, Bharathi Women's College, Affiliated to University of Madras, Chennai.
ntrfbwc@gmail.com

Background and Aim: Pregnancy Induced Hypertension (PIH), a condition characterized by high blood pressure (>140/90 Mm Hg) develops after 20 weeks during pregnancy. PIH is significantly reflected in placenta due to maternal vasospasm, insufficient utero-placental blood and endothelial dysfunction, demonstrating the influence of antiangiogenic process during PIH. Nitric Oxide (NO) plays a vital role in proper vascular function and the associated angiogenesis. However, NO synthesis is tightly regulated by nitric oxide synthase (NOS). There are 3 isoforms, in which ENOS and INOS are widely examined as it reflects the vascular function during normal and pathophysiological condition. Though they belong to same NOS group, their functions are not alike. During pregnancy, expression of ENOS imparts proper implantation, maintenance, growth and maturation of fetus, thus believed as angiogenic factor. Whereas, the expression of INOS was inversely proportional to the angiogenesis; Thus, considered as the antiangiogenic factor. Apart from that, adipokines (leptin and adiponectin) dysregulation was also observed to be implicated in the pathogenesis of PIH via interrupting energy homeostasis and no production. Hence, demand for medicinal intervention which can regulate the angiogenic /antiangiogenic factors is high. Since, squid (seafood) and tyrosol (a compound observed in squid from lcms analysis) were reported to possess antihypertensive activity. Current study deals with the evaluation of their vasoregulatory effect via ascertaining enos, inos, leptin and adiponectin in PIH placenta. Materials and Methods: Standard protocol was employed for the preparation of squid mantle extract (SME) and tyrosol solution. Expression of ENOS, INOS, leptin and adiponectin in placenta (normotensive and hypertensive) were quantified by ELISA methods. Results: Increased INOS, leptin and decreased ENOS, adiponectin were noted in PIH placenta; whereas, decreased INOS, leptin and increased enos, adiponectin in PIH placenta with SME and tyrosol solution. Conclusion: Results reveal that sme and ts significantly alters the level of adipokines and angiogenic growth factors. Hence, the present study emphasizes that SME may have the vasoregulatory effect during PIH condition.

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OR25 | *IN-VITRO* STUDY AND TRANSCRIPTOMIC ANALYSIS OF BREAST CANCER CELLS TREATED WITH *PARMOTREMARETICULATUM* EXTRACT

Ramya.K and T. Thirunalasundari
Dept. of Industrial Biotechnology, Bharathidasan University, Tiruchirappalli
Tamil Nadu, India - 620024.

Cancer is one among the most dreadful diseases in the world. Breast cancer accounts for the second leading cause of deaths related to cancer and hence, receiving more attention among Scientists for newer discoveries on diagnosis, treatment and prevention. Various cutting-edge technologies have emerged today that brings together interdisciplinary research, aiming towards exploration of the scientific world to aid next level of disease diagnosis and treatment strategies. Currently, molecular level analysis of diseases like cancer is being the strategy to fasten the process of personalised therapies. *In-silico* and *in-vitro* assays are the powerful tools that support the molecular level understanding of the complexities involved in cancer cells, and, for understanding gene function and target validation. mRNA sequencing is the most sensitive and rapid method that helps in analysing the

transcriptomes of any study designed towards understanding the intricacy of a disease or a biological process. It also quantifies gene expression, thereby rendering a complete view of the coding transcriptome which can help in finding better therapeutics for cancer. Apart from emerging technologies, the present scenario of cancer research lies in identifying newer therapeutics from natural resources without side effects. Lichens are one of the important naturally available species in the world that have enormous medicinal properties. This study is designed to understand the anticancerous nature of *Parmotrema reticulatum* against breast cancer cells. *In-vitro* assays and NGS analysis have been performed to identify potential gene targets. MTT assay revealed the anticancerous nature of the lichen which was supported by apoptosis and cell cycle assay. Transcriptome analysis by NGS represents a wealth of information on the genes involved in breast cancer pathways. Comparative gene expression profiling between the control and the test (*P. reticulatum* treated MCF-7 cell lines) depicted the genes that have active roles in the process of breast cancer.

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OR26 | A RANDOMIZED OPEN LABELLED TRIAL ON THE TREATMENT OF ACTIVE RHEUMATOID ARTHRITIS WITH ETANERCEPT COMPARED WITH METHOTREXATE

Puvvada Ranadheer Chowdary*[1], Praveen. D[1] and Vijey Aanandhi M[2]

[1]Research Scholar, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies, Chennai, India

[2]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences Vels Institute of Science Technology and Advanced Studies, Chennai, India.

Background: Rheumatoid arthritis (RA) is a long-term autoimmune disorder that primarily affects joints. It typically results in warm, swollen, and painful joints. The key objectives are to assess the quality of life in patients receiving etanercept and methotrexate, to assess the compliance among the RA patients. The secondary objectives are to monitor the drug interactions of these regimens and the conclusions drawn from the study can be utilized to perform a bigger multi-centre study so that an optimized regimen could be derived. Methodology: A randomized controlled trial was carried out on all the active rheumatoid arthritis cases. Randomized permuted blocks were used to analyze the Patients received methotrexate (MTX) 7.5mg twice weekly along with their usual medicines for a period of 12 weeks. Patients received Etanercept 25mg twice weekly along with their usual medicines for a period of 12 weeks. Results: Among the control group 6 (15.00%) have shown antigen positive while Test group showed 1 (02.50%) patient. *$p<0.05$ which is significant. On performing the Chi-squared test, the $\chi 2$ value was found to be 6.9471 with 95% level of significance. $p = 0.00983$. Hence there is a significant difference in the test group. Conclusion: Etanercept added regimens have proved to be much efficacious in this study. The presence of minor adverse events was expected. A long term study could well provide with much better information.

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OR27 | INFLUENCE OF *POR*28* POLYMORPHISM ON ANALGESIC EFFECT OF TRAMADOL IN ACUTE OSTEOARTHRITIC KNEE PAIN IN SOUTH INDIAN POPULATION

Samuel Kirubakaran.D[1], Sudar Codi R[2], Aarthi M[3], Manoharan M[4] Adithan C[2,3] [1]ICMR-STS, 2nd year MBBS, Mahatma Gandhi Medical College & Research Institute, Puducherry [2]Dept of Pharmacology, Mahatma Gandhi Medical College & Research Institute, Puducherry [3]Central Inter-Disciplinary Research Facility, Sri Balaji Vidyapeeth, Puducherry, [4]Dept of Orthopedics, Mahatma Gandhi Medical College & Research Institute, Puducherry.

Introduction: Inadequate pain relief is commonly experienced by patients on pain medications for chronic diseases. POR is an electron transfer enzyme and polymorphism in it mediates varying levels of drug metabolism. Therefore, the presence of *POR*28* (C > T) polymorphism may affect the analgesic effect of tramadol. Objective: To study the influence of *POR*28* (C > T) on the analgesic effect of tramadol in acute osteoarthritic knee pain relief. Methods and Materials: The study was conducted on eighty five patients who visited the orthopedic department of MGMCRI with acute knee pain, confirmed by clinical and radiological examination for OA knee. Seventy-five fulfilled the inclusion and exclusion criteria and were included in the study. After obtaining informed consent, genotyping was done. Pain intensity was recorded using visual analogue scale (VAS) at baseline and after 5 days of 50 mg (BD) oral tramadol therapy. Patients were categorised as responders and non-responders based on their VAS scores. Genotyping was performed using Taqman SNP assay on Real time PCR. Results: The Frequency of Extensive metabolizers (EMs), Intermediate metabolizers (IMs) and Poor metabolizers (PMs) were 48%, 37.33% and 14.67% respectively. Allele frequencies of *POR*28* (C) was found to be 81.967% and *POR*28* (T)was found to be 40.983%. The observed genotype frequencies were consistent with Hardy-Weinberg expectations (*p* value = 0.165857). No statistical significance was found between the genotype distribution and pain relief. (*p* value = 0.1164) Conclusion: The genotype of POR*28 does not influence the analgesic effect of tramadol in OA knee patients in south Indian population.

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OR28 | LEAVES OF *MELASTOMA MALABATHRICUM* FOR SPLA$_2$ INHIBITION IN INFLAMMATION AND CANCER

Sophiya P.[1], Lohith N.S.[2], Sandhya Bhat[3], Narayanappa[4], Dharmappa K. K.
Department of studies in Biochemistry, Jnana Kaveri Post Graduate Centre, Mangalore University
Chikka Aluvara, Kodagu, Karnataka, India-571232

Medicinal plant *Melastoma malabathricum* is found throughout the south-east Asian countries. Traditional usage of *M. malabathricum* for treatment of various ailments is documented. The present study deals with the evaluation of the role of *M. malabathricum* decoctions in curing inflammatory diseases. *M. malabathricum* leaves extracts were prepared with different solvents and carried outtotal phenolics, total flavonoid content, antioxidant activity, protein denaturation assay, anticancer activity (prostate cancer cell line) MTT Assay, sPLA2 inhibition. Among different solvent extracts of *M. malabathricum*, ethanol extract showed greater activity and inhibition. More precisely focussing on secretory phospholipase A2 (sPLA2) inhibition which is the one of the major causes for inflammation, that leads to chronic inflammatory diseases such as gouts, rheumatoid arthritis, and different cancers. Total phenolic and flavonoid content was found to be 36.775mg GAE/g dry wt. and 245.5 mg QE/g dry weight respectively. The ethanolic extract of *M. Malabathricum* exhibited the highest free radical scavenging activity in the DPPH method and phosphomolybdneum assay, IC50 values are 77.424µg/ml and 95.159µg/ml respectively. The anti-inflammatory assay (protein denaturation assay) was performed withIC50 value, 45.518µg/ml. The ethanolic extract showed greater sPLA$_2$ inhibition (143.9µg/mL) in ELISA method against standard inhibitor thioetheramide-PC (6.73µg/mL) and the MTT assay IC50 value was 630.576µg/ml against cisplatin standard on the prostate cancer (PC3) cell line. Thus, the results indicated that the ethanolic extract of *M. malabathricum* leaves showed greater anti-oxidant activity, sPLA$_2$ inhibition, anti-inflammatory and anticancer activity.

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OR29 | PROTEIN CONTENT, PHENOLIC AND ANTIOXIDANT ACTIVITY OF HONEY FROM DAKSHINA KANNADA, INDIA.

Sushas Krishna AG[1] and Dr. Rajshekhar K. Patil Research Scholar, Department of Applied Zoology, Mangalore University, Karnataka, India patilsirmu@gmail.com

Natural honey is one of the most highly used products due to its unique properties, which are attributed to effect of the various groups of substances it contains. Protein content, total phenolic and antioxidant activity were evaluated from seven honey samples from *Apis cerana* collected from Dakshina Kannada, Karnataka, India. The protein contents were determined using Lowry's method. The total phenolic content was determined using the Folin- Ciocalteu reagent and total antioxidant activity was obtained using the phosphomolybdenum method. The Lowry's method allowed the detection of protein in honey samples and a positive correlation was observed between total phenolic content and antioxidant activity indicating that phenolic compounds are responsible for antioxidant ability of honey from Dakshina Kannada.

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OR30 | LICARIN A FROM *MYRISTICA FRAGRANS* INDUCED AUTOPHAGY MEDIATED CELL DEATH IN NON-SMALL CELL LUNG CANCER CELL LINES BY REGULATING AKT/MTOR AND AMPK PATHWAYS

Uma Maheswari M[1], Sudha Rani Sadras[1]*

[1]DBT-IPLS Programme, *Assistant Professor, Department of Biochemistry and Molecular Biology Pondicherry University, Pondicherry, 605014, India.

Despite the advances in treatment, survival rate of lung cancer patients is about 15-18% only, and this is due to drug resistance developed by the cancer cells. In recent years, autophagy is reported to aid resistance of lung cancer cells by supplying nutrients for survival under chemotherapeutic stress. Therefore, compounds that inhibit autophagy or induce autophagy mediated cell death can serve as a better treatment strategy. Licarin A, a phytochemical from the seeds of *Myristica fragrans* has been shown to exhibit anticancer potential against various cancer cells. In the present study, Licarin A (LCA) was tested for its antiproliferation effect against NSCLC cell lines and its mechanism of cell death was investigated. LCA exhibited antiproliferative effect against A549, NCI-H520 and NCI-H460 cells in a dose and time-dependent manner with a minimum an IC50 of 22.19 ± 1.37µM for A549, and 20.03 ± 3.12 µM for NCI-H23 cells. Also, increased mRNA expression of Beclin1 and LC3 and decreased protein levels of p62 was observed in LCA treated cells indicating the activation of autophagy. Inhibition of autophagy using Beclin1 siRNA or chloroquine caused reversal of LCA induced autophagy and a reduction in cleaved caspase 3 and PARP levels. These results depicted that LCA caused autophagy mediated apoptotic cells death in NSCLC cell lines. Further, LCA treatment caused significant reduction in pAkt, pmTOR and survivin levels while increasing the pAMPK levels which suggested that LCA regulated autophagy activation by downregulating Akt/mTOR and upregulating AMPK pathway. Data from this study provided an insight into the molecular mechanism of action of Licarin A and hence it can serve as a potential drug candidate or as an adjunct for future NSCLC theraphy

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OR31 | EVALUATING THE ROLE OF GYRA GENETIC MUTATION AND CONCERN OVER THE EMERGING H. PYLORI LEVOFLOXACIN RESISTANCE: CAN ANISOCHILUS CARNOSUS BE AN ALTERNATIVE THERAPY?

Vignesh B Shetty*, Binit Lamichhane**, Alfred Chin Yen Tay**, C Ganesh Pai***, Mamatha Ballal*
*Enteric Diseases Division, Department of Microbiology, Central Research Lab, Kasturba Medical College, Manipal, MAHE, INDIA
**Helicobacter pylori Research Laboratory, Marshall Centre for Infectious Diseases Research and Training, University of Western Australia, Western Australia, Australia
***Department of Gastroenterology & Hepatology, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, INDIA

Helicobacter pylori receives a high tropism towards gastric epithelial cells and contributes to the austere form of the gastroduodenal disease. Generally south Asian strains of H. pylori show higher resistance to metronidazole and clarithromycin. Moreover, India is now demonstrating high emerging levofloxacin-resistance, the second-line regimen drug and a rescue treatment for H. pylori eradication. Antibiotic resistance pattern for H. pylori is untracked in India. Hence, we aimed to determine the antibiotic resistance in H. pylori with special emphasis on genetic mutation responsible for levofloxacin-resistance and to evaluate Anisochilus carnosus against H. pylori. Methods: Dyspeptic patients were chosen for endoscopy and biopsies collected. H. pylori were assessed for metronidazole, clarithromycin, levofloxacin, amoxicillin, and tetracycline. The readings were interpreted as per EUCAST guidelines. The strains were then sequenced by MiSeq and the raw reads were analysed with bioinformatics tool for mutations in gyrA and gyrB genes. In-vitro agar dilution was performed to assess the activity of Anisochilus carnosus. Results: Our analysis of 121 of H. pylori antibiotic susceptibility showed resistance to metronidazole (82.6%), clarithromycin (19%), levofloxacin (56.2%), amoxicillin (7.4%), and tetracycline (4.9%) respectively. Among the 43 strains sequenced, 9 strains were levofloxacin-sensitive. Based on amino-acid sequence mutation analysis, gyrB missense mutation was seen in 1 strain and all the remaining were gyrA mutations and were missense. These noted mutations statistically were strongly in agreement with phenotypic findings. In-vitro activity of Anisochilus carnosus extract was promising. Conclusion: In summary, due to this high resistance to levofloxacin, it will be more challenging to treat H. pylori infections in future, since the efficacy of levofloxacin-based treatment is reduced in this particular region. Furthermore, levofloxacin is most commonly detected as showing dual or triple resistance together with metronidazole and clarithromycin. Therefore, alternative therapy like natural products are promising in combating resistance to *H. pylori.*

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OS01 | THE INHIBITION OF GLYCATION BY ANTI-DIABETIC HERB (GARLIC) AND EXOGENOUS ANTI-OXIDANT (VITAMIN C) IN RELATIONSHIP WITH THE LEVEL OF REDUCING POWER OF EACH.

Sayed Aneesa, Z.G Badade and G.S Narshetty

Introduction: Diabetes mellitus is the most common endocrine disorder characterized by hyperglycemia and long-term complications. There is a progressive decline in beta cell function of pancreas and insulin sensitivity in type 2 diabetes mellitus, which results in deteriorating glycemic control. This leads to advance glycation in products (AGE) which is a major cause of diabetic complications Oxidative process are believed to play important role in AGE formulations. Therefore,

AGE formations may be inhibited

by agents possessing anti-oxidant property, Exogenous anti-oxidant that is herbs and herbal formulation from the diet and endogenous anti-oxidants.Aims and objectiveThe objective of our study is to investigate the inhibition of glycation by anti-diabetic herb that is Garlic and exogenous anti-oxidant that is Vitamin C in relationship with the level of reducing power of each.Material and methods Bovine serum albumin and haemoglobin were glycated with glucose and fructose in presence and absence of inhibitors, natural extracts (Aqueous and ethanolic) and exogenous anti-oxidants in vitro using method of thermal glycation and method by fluckigret. al respectively, Absorbance was measured. Conclusion: Anti-oxidant property of extract was measured by reducing power assay by limliyua et.al.The anti-diabetic herb decreases AGE formulation in vitro while Vitamin C accelerates.Results Our results shows importance of anti-diabetic herb and prevents secondary diabetes and other complications.

POSTER PRESENTATION

PP01 | GREEN SYNTHESIS OF SILVER NANOPARTICLES USING *CURCUMA LONGA* (TURMERIC): THEIR ANTIBACTERIAL AND BIO-M IC L P OP I "

Akshatha S.J.[a] and Srinath B.S.[B]
Department of Studies and Research in Microbiology
Jnana Kaveri PG Centre, Chikka Aluvara, Mangalore University

Green synthesis of nanoparticles is relatively new emerging field of nanotechnology which has economic and eco-friendly benefits over chemical and physical processes of synthesis. In the present study silver nanoparticles was synthesised by using *Curcuma longa* plant materials. Curcumin is a bioactive component of the *C. longa*. Aqueous extract of *C. longa* was assessed for phytochemical analysis. Formation of silver nanoparticles was characterized by UV-spectrophotometer analysis, SEM analysis, FTIR and DLS analysis. Synthesised silver nanoparticles from *C. longa* rhizome and leaf extract have a wide spectrum of biological actions which include antibacterial activity, antioxidant, anti-inflammatory, Nucleic acid leakage and exhibited a significant level of haemolytic activity. Thus, it can be applied in various fields such as medical field, industrial field and are addressed in some of the environmental problems.

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PLAGIOCEPHALY- A CASE REPORT

PP02 | Anshu Sharma, Mahesh Sharma, Ramandeep Kaur Government Medical College and Hospital, Chandigarh

Skull shape is normally is divided in to three categories brachycephaly, dolichocephaly and mesaticephly depending on the morphometry, specific for any race. Any deviation from the normal gives origin to the dysmorphic skull. A plagiocephlic skull was found during routine osteology teaching of first proff MBBS students. The right side of the skull was larger anteroposteriorly as well as transversely. Norma verticalis showed sagittal suture placed obliquely from anterior to posterior side. Temporal bossing was seen on right side. The Norma occipitalis showed longer left limb of the lambdoid suture along with an accessory bone in suture. Norma frontalis showed deviated bony nasal septum. Temporal prominence was more developed seen on right side. Norma basalis showed more developed bones on left side of skull. Internally, all cranial fossa were larger on right side. On removing the calvaria the frontal bone showed big frontal air sinus. The known dysmorphic varieties of skull are Scaphocephaly, Acrocephaly, Oxycephaly, Trigonocephaly, Plagiocephaly etc. They all result from either synostosis of sutures or abnormal positioning of the fetus in intraembryonic life or after birth. The various factors causing dysmorrphology are Genetic- fibroblast growth factor receptors (FGFR 1, -2, -3) and the TWIST and MSX2 genes, environmental factors like Rickets (caused by vitamin D deficiency, resistance to vitamin D, chronic renal failure, or hypophosphatemia) and hyperthyroidism. The effect of the abnormal shape of skull is restrained brain growth because the brain cannot expand in the direction of the synostosed suture. The defect can be diagnosed on ultra sound, CT scan and MRI in utero. Surgical correction in live born is supplemented by multidisciplinary support trough out the life.

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PP03 | SHORT TERM, LOW DOSE OF ARSENIC TRIOXIDE INDUCES HEPATOCYTES DNA DAMAGE AND MITIGATION THROUGH TROXERUTIN: AN *IN VITRO* AND *IN VIVO* STUDY

S. Nithyanathan, A. Subastri, CH. Ramamurthy and C. Thirunavukkarasu* Department of Biochemistry and Molecular Biology, School of Life Sciences, Pondicherry University, Puducherry-605 014, India. tchinnasamy@hotmail.com

Arsenic toxicity is a universal health problem affecting many millions of people throughout the world

including India. On the other hand, arsenic trioxide (As_2O_3) is promising anticancer agents for acute promyelocytic leukemia. Since As_2O_3 is toxic, only combination therapy is recommended for leukemia patients. Because of xenobiotic function and anatomical location, liver handles >80% of As_2O_3 before it distributes to other parts of the body, as a result liver is most susceptible organ for As_2O_3 before its systemic effect. The present study has been carried out to investigate the As_2O_3 induced toxicity in primary rat hepatocytes and liver, and ameliorative effect of bioflavonoid troxerutin (TXR). As_2O_3 showed significant decrease (P<0.05) in viability of primary hepatocytes at 2.5µM concentration, IC50 was found to be 18.5µM. As_2O_3 induced toxicity includes increased (P<0.001) DNA damage, DNA adducts, ROS, TBARS and decreased mitochondrial membrane potential, enzymatic antioxidant activity and GSH level. Concurrent treatment of TXR with As_2O_3 significantly (P<0.01) revealed cytoprotective effect on hepatocytes through altering the As_2O_3 induced pathological changes (P<0.05). I*n vivo* As_2O_3 treatment shows significantly increased DNA damage, DNA adducts, TBARS and decreased GSH level, without major changes in liver histology, however P<0.01 level elevation in serum ALT alone was observed. The above changes were reduced upon pre-treatment of TXR. In conclusion, bioflavonoid TXR could afford potential protective activity over As_2O_3 induced oxidative hepatocytes dysfunction *in vitro* and *in vivo* conditions and TXR could be an excellent combination therapy compound while As_2O_3 using as a therapeutic agent.

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PP04 | *IN VITRO* ANTIOXIDANT ACTIVITY OF SELECTED INDIAN SPICES

Sardar Hussain[1], Komal.K.P.[2], Ramesh Iyyanahalli[2] **[1]**Asst.Professor Department of Biotechnology, **[2]**Asst. Professor Department of Biochemistry, **[2]**Asst.Professor Department of Zoology Government Science College, Chitradurga.
sardar1109@gmail.com

Medicinal plants represent a rich source of antioxidant agents. Plants are used medicinally in different countries and are a source of many potent and powerful drugs. The medicinal value of plants has assumed a more important dimension in the few decades owing largely to the discovery that extracts from plants contain not only minerals and primary metabolites but also a diverse array of secondary metabolites with antioxidant potential. Antioxidant can reverse the damage caused by oxidation. The objective of the present study is to assess the Invitro antioxidant activity of *Myristica fragrance* (Mace) and *Illicium verum* (star anise). The Methanolic extracts of *Myristica fragrance* and *Illicium verum* were prepared and antioxidant activity of two plant extracts was assayed invitro by DPPH-radical scavenging activity, it was found that 500ug /ml of the extract lowered the radical's level to 80.95% and 64.01% respectively. Since inhibition of DPPH radicals above 50% is considered to be significant and suggests the scavenging potential of different constituents of the extracts used in the present study.

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PP05 | CRYSTAL, SPECTRAL STUDIES AND HIRSHFELD SURFACE ANALYSIS OF 3-*TERT*-BUTYL-7-[(*E*)-2-(3,4-DICHLOROPHENYL)ETHENYL]-4*H*-[1,3,4]THIADIAZOLO [2,3-*C*][1,2,4]TRIAZIN-4-ONE

Gayathri B. H[a & b] , Jagadeesh Prasad Dasappa[a]*
[a]Dept. of Chemistry, Mangalore University, Mangalore, Karnataka State-574199, India
[b]P.G. Dept. of Chemistry, BMS college for Women, Basavanagudi , Bangalore, Karnataka State-574199, India

We are reporting the single crystal X-ray diffraction of 3-*tert*-butyl-7-[(*E*)-2-(3,4-dichlorophenyl) ethenyl]-4*H*-[1,3,4]thiadiazolo[2,3-*c*] [1,2,4]triazin-4-one (**7**). This compound was characterized using

spectral studies (FTIR, ^{1}H-NMR and ^{13}C-NMR spectroscopy). X-ray diffraction showed that the structure is further stabilized with C---H...O and □...□ intermolecular interactions. In addition, the intermolecular contacts are visualized and analyzed using Hirshfeld surfaces computational method. Further, the optical and electrochemical properties have been studied using UV-Vis absorption and cyclic voltammetry (CV) measurements. Density functional Theory (DFT) computations have been carried out for compound **(7)** and the obtained values found to be considerably in good agreement with the experimental results.

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PP06 | MOLECULAR DOCKING AND THEORETICAL EVALUATION OF ADMET PROPERTIES OF SENKIRKINE, A PYRROLIZIDINE ALKALOID AS POTENTIAL CYCLOOXYGENASE (COX-1, COX-2) INHIBITOR

Sardar Hussain[1#], Chandrasekharan Guruvayoorappan[*], Komal K.P.[2,] Sreenivasa Ennaganti[2 1]
Asst. Prof., Dept. of Biotechnology, Government Science College, Chitradurga.577501, Karnataka.
[#]Ph.D. Scholar, R&D Centre, Bharathiar University, Coimbatore, 641046, Tamilnadu.
[*]Asst. Prof., laboratory of Immunopharmacology and Experimental Therapeutics, Division of cancer Research, Regional Cancer Centre, Medical College Post, Thiruvananthapuram,695011, Kerala, India.

Aim and Introduction: Inflammation, a defencemechanism and a molecular mediator against harmful stimuli that cause pathological conditions in the body. Alterations in the cascade of inflammatory reactions had an increasing effect on aggragavating various disorders which have enormous impact on public health, with an increasing tendenciy of mortality. The effective mediators that initiate the inflammatory response are prostaglandins whose synthesis depends on the activity of cyclooxygenase enzymes. Inhibition of prostaglandin biosynthesis targeting the COX isoforms (COX-1 and COX-2) has been extensively studied as a potential for the development of novel therapies for inflammation and its related disorders. Considering the menace of several side effects with the initial anti-inflammatory drugs targeting COX enzymes, consequential efforts are ongoing to characterize plant derived compounds as new COX inhibitors for therapeutic intervention. Method: In view of this point, we subjected a pyrrolizidine alkaloid, Senkirkine to reveal its potentiality through molecular docking studies with COX-1 homology model and COX-2 structure. Docking was performed by DS LibDock module. Result and Discussion: Our docking analysis afforded insight information of the binding interactions of Senkirkine with both of the COX enzymes. The compound had a dock score of 71.043 K.cal/mol making a single hydrogen bond with COX-1 and had a dock score of 101.422 K.cal/mol making two hydrogen bonds with COX-2. Furthermore, the predicted structural interactions information will be helpful for future studies that might be utilized for the molecular recognition process of selective derivatives of this compound as COX inhibitors. Finally, ADMET screening of the compound was carried out to find its safety profile.

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PP07 | SYNTHESIS, CHARACTERISATION AND ANTIMICROBIAL STUDY OF SCHIFF BASE DERIVED FROM N'-[(4-CHLOROPHENYL) METHYLIDENE] PYRIDINE-4-CARBOHYDRAZIDE AND THEIR COMPLEX WITH COBALT (II)

Kumble Divya[*]
*Assistant Professor, Post Graduate Department of Chemistry, B.M.S College for Women, Basavanagudi, Bengaluru-560 004, Karnataka, India
kumbledivya71088@gmail.com

New Schiff base ligand N'-[(4-chlorophenyl) methylidene] pyridine-4-carbohydrazide has been synthesized and complexed to Co (II) metal ion. The Schiff base ligand was synthesized by the condensation of isoniazide with 4-chlorobenzaldehyde. The ligand and their metal complexes are characterized by C, H, N analysis, IR spectra and UV-Vis for tentative structure proposal. The ligand

is coordinated to Co (II) metal ion through the enolic oxygen and azomethine nitrogen resulting in a square planar geometry. The ligands and metal complexes were studied for their antimicrobial activities against gram positive and Gram-negative bacteria. They were found to biologically active.

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PP08 | ANTIMICROBIAL ACTIVITY OF*KIRGANELIA RETICULATA*, AGAINST SELECTED HUMAN PATHOGENS

B. Lingannaiah*, Shashiraj.K.N.[1], Deepika R.[2]

*Associate Professor, [1,2]Department of P.G.Studies in Botany, Government Science College, Chitradurga-577501

rajscbz@gmail.com

Medicinal plants are the source of many drugs of modern world, many plants are cheaper and more accessible to most peopleespecially in developing countries that than orthodox medicine and there is lower incidence of adverse effect of their use. Some herbs used today are valued for their antimicrobial activities and medicinal effects. The objective of the study is to explore new antimicrobial compounds from *Kirganelia reticulata* of Euphorbiaceaefamily. The methanolic, and petroleum ether extracts of *Kirganelia reticulata* were tested against *Staphylococcus aureus* and *Klebsiella*. The antimicrobial activity was done by disc diffusion method. The methanolic extract *Kirganelia reticulata*gave highest inhibition zone against *Staphylococcus aureus* and petroleum ether extract *gave* highest inhibition zone against *Klebsiella.*

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PP09 | ANTIOXIDANT AND ANTI-APOPTOTIC PROPERTIES OF ASTAXANTHIN ENHANCE THE LONGEVITY OF *SACCHAROMYCES CEREVISIAE*

Sudharshan SJ, Bhavana Veerabhadrappa, Subasri Subramaniyan and Madhu Dyavaiah

Department of Biochemistry and Molecular Biology, School of Life Sciences, Pondicherry University, Pondicherry 605014, India

The budding yeast, *Saccharomyces cerevisiae*, is an efficient model for studying oxidative stress, programmed cell death and aging. The present study was carried out to investigate antioxidant, the anti-apoptotic and anti-aging activity of a natural compound, astaxanthin, in *S. cerevisiae* model. The survivability of yeast antioxidant-deficient strains (*sod1*Δ, *sod2*Δ, *cta1*Δ, *ctt1*Δ and *tsa1*Δ) increased by 20%–40% when cells were pre-treated with astaxanthin, compared to hydrogen peroxide alone, as demonstrated in spot and colony forming unit assays. Reduced reactive oxygen species (ROS) levels, increased glutathione, decreased lipid peroxidation and induced superoxide dismutase activity in astaxanthin-treated cells indicate that astaxanthin protected the cells from oxidative-stress-induced cell death. In addition, astaxanthin protected anti-apoptotic-deficient strains (*pep4*Δ and *fis1*Δ) against acetic acid and hydrogen peroxide-induced cell death that suggests anti-apoptotic property of astaxanthin, and it was further confirmed by acridine orange/ethidium bromide, annexin V and 4‘,6-diamidino-2-phenylindole staining. The yeast chronological lifespan assay results showed that astaxanthin extends the lifespan of antioxidant-deficient strains by scavenging ROS, and anti-apoptotic-deficient mutants by protecting from apoptotic cell death compared to their respective untreated cells and wild type. Our results suggest that astaxanthin enhances the longevity of yeast *S. cerevisiae* by reducing oxidative stress and apoptosis.

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PP10 | STUDY ON TRADITIONAL PRACTICES OF ETHNO-VETERINARY MEDICINES

Thejaswi B Shetty, Nalini B M

Humans have been using healing herbs since long. As caregivers for animals, we take pride in bringing up them with good health. Equally intense is our worry when they fall ill. Infact animal

experts have long observed that sick animals by its nature seek out herbs to help them deal with injuries/illness. The American Veterinary Medical Association in 1996 officially recognized the importance of botanical medicine and other complementary therapies in veterinary care. So if used in right ways even natural remedies may be effective in treating animals for a variety of ailments. Many of us really aren't trained enough to gather the right plant parts and prepare the herbal medications. There are so many precautions to be taken. Some herbs can interact with other herbs; many are beneficial in small doses and can be dangerous in large amounts. For example: Ginkgo affects the blood's ability to clot; Ginseng can cause high blood pressure in some cases. The present study has compiled list of some common ailments of veterinary animals and their herbal remedies, collected after interviewing some traditional holistic veterinarians in 10 villages of Madikeri Taluk. Common herbs include *Ferula asafetida*, applied for affected udder of cattle; *Azadiirachta indica*, it heals burns and soothes dry and irritated skin; *Achillea millefolium* helps stop bleeding; *Cynodon dactylon* leaves help set to the digestion; *Euphrasia officinalis* has long been used to treat eye infections. On a whole it includes some detailed understanding of how to deal with herbal medicines, their usage methods, benefits, precautions to be taken while treating different pets and livestock.

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PP11 | ANTIMICROBIAL ACTIVITY OF SELECTED SPICES AGAINST HUMAN PATHOGENS

Nataraja B.T.[1], Onkarappa R[2].

[1]Department of Microbiology, Government Science College, Chitradurga,

[2]Department of Microbiology, Sahyadri Science College, Shivamogga.

natarajabt@gmail.com

A ―spice‖ is culinary term not a botanical category, it does not refer to a specific kind of plant or plant part. Some spices and herbs used today are valued for their antimicrobial activities and medicinal effects in addition to their flavor and fragrance qualities. The objective of the study is to explore new antimicrobial compounds from selected spices. The methanolic, and petroleum ether extracts of *Cinnamoum zeylanicum* and *Myristica fragrance* were tested against *Staphylococcus aureus* and *E. coli*. The antimicrobial activity was done by disc diffusion method. The methanolic extract of *Myristica fragrance* gave highest inhibition zone against *E. coli* and *Cinnamoum zeylanicum gave* highest inhibition zone against *S. aureus*.

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PP12 | ANTI-OXIDANT ACTIVITIES AND PHYTOCHEMICAL CONTENT OF METHANOL EXTRACTS OF *CAPSICUM FRUTESCENS*

Nethravathi B.T.[1], Nutan S.R.[1], Spandana S.S.[1], Giresha A.S.[2 *]

[1]Department of Studies in Botany, Jnana Kavery Campus, Mangalore University, Chikka Aluvara, Kodagu, Karnataka, India. nethrathimmappa3@gmail.com [2]Department of Studies in Biochemistry, Jnana Kavery Campus, Mangalore University, Chikka Aluvara, Kodagu, Karnataka, India.

girishas25@gmail.com

Free radicals and related species such as reactive oxygen species/ROS and reactive nitrogen species/RNS were generated by various endogenously, physicochemical exposure or pathophysiological states able to alter lipids, proteins and DNA and have been implicated in aging and several human diseases. Overproduction this ROS from activated neutrophil and macrophages leads to tissue injury by damaging the macromolecule and lipid peroxidation of membranes. ROS propagate inflammation by stimulating the release of the cytokines such as tumour necrosis factor α, interleukins, which stimulate recruitment of additional neutrophil and macrophages. Several Non

steroidal anti-inflammatory drugs (NSAIDs) cause many side effects. Phytochemicals with antioxidant properties are great interest due to their beneficial effects on human health as they provide protection against oxidative deterioration. Plants are the cheapest source of anti-oxidants with desirable nutrients. In this context, sequential solvent extracts of *Capsicum frutescens* (Gandhari Menasu) fruit, a common Indian spice was subjected to estimation phytochemical and evaluate antioxidant property. Among the extracts, methanolic extract of Capsicum frutescens (MCF) exhibit higher levels of Phenolics (1.609 ± 0.35g/100g), tannins (0.904 ± 0.26g/100g), flavonoids (0.509 ± 0.31g/100g), alkaloids (0.516 ± 0.13g/100g) and saponins (0.182 ± 0.2g/100g) followed by ethanol and water extract. The DPPH, nitric oxide, superoxide free radical scavenging activity and reducing power capacity of MCF was found to be 17.25 to 53.20% at 50 µg/ml concentrations with IC50 values ranged from 94.43µg/mg to 246.4µg/mg. The MCF seems to be the most promising source of natural antioxidant compounds. Further, isolation of bioactive compounds required for identifying the unknown compounds to establish their pharmacological properties.

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PP13 | GRAVIOLA AS POTENTIAL ANTI-CANCER NUTRACEUTICALS

Nithya Devi Murugesan*, Nirmaladevi[1]

*Department of Biochemistry (PG and Research), Kongunadu Arts and Science College, Coimbatore

[1]Department of Biochemistry, Avinashilingam Deemed University for Women, Coimbatore

Plant produces a non-nutrient chemical substance called phytochemicals which is evolved in plants to protect themselves against highly reactive oxygen species and for their own defence mechanism. Nutraceuticals are 'natural' substances isolated or purified from fruits and vegetablesand used in a medicinal fashion. Several naturally derived food substances have been studied in cancer in an attempt to identify natural preventative therapies for this disease. Vitamin E, selenium, vitamin D, green tea, soy, and lycopene have all been examined in human studies. Other potential nutraceuticals that lack human data, most notably Graviola might also have a preventative role in this disease. Unfortunately, most of the literature involving Nutraceuticals in cancer is epidemiological and retrospective. When the human ingests these plant foods composed of phytochemicals associated with antioxidant properties (capacity to scavenge free radicals) human developed the chemical defence mechanisms accounting for the availability of the required species in the diet. In today's world human beings are exposed to environmental carcinogenesis or dietary carcinogenesis which leads to metabolic activation of normal cells which cause health problems. So, a demand for natural bioactive principles has been increased because of side effects associated with synthetic drugs. These extracted Nutraceuticals from Graviola have nutrient properties helps to get defined health goal and these will help to treat chronic disease and also to prevent other diseases. These kinds of products cannot be classified as food, so a new term was designated between nutrients and pharmaceuticals called Nutraceuticals. An attempt was made to identify different classes of phytochemicals and its mechanism of prevention and treatment to cancer.

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PP14 | IDENTIFICATION OF ONCOGENIC CANDIDATE GENES IN HYPOXIC MICROENVIRONMENT: AN META ANALYSIS APPROACH

K. Premkumar[1], M. Manikandan[1], V. Hemamalini[2]

[1]Cancer Genetics and Nanomedicine Laboratory, Department of Biomedical Science, Bharathidasan University, Tiruchirappalli – 620 024, Tamil Nadu, India. [2]Department of Bioinformatics, School of Life Sciences, Bharathiar University, Coimbatore, Tamil Nadu, India.

Background: Approximately 90% of deaths caused by cancers results from the metastatic spread of primary tumors. Therefore, it is critical to understand the mechanisms of metastasis and to identify new drug targets for therapy. Hypoxia is a critical microenvironment in tumor pathogenesis. There is a close relationship hypoxia and tumor metastasis and poor prognosis. This study is intended to reveal the potential oncogenes involved in tumorogenesis in hypoxic microenvironment. Various datasets were analyzed to identify the candidate genes. Methods: Multiple transcriptomic cancer cohorts of various cancers were collected from GEO and meta-analysis was carried out within the datasets under normoxia and hypoxia. Functional Pathways, signaling pathways signatures were mapped using the differentially expressed genes from Msigd Band protein-protein Interaction (PPI) network analysis. Results: Integrative analysis revealed a specific set of genes (HK2, ADM, LOX and ANKRD) were consistently expressed in all the cancer in response to hypoxia. The Functional significance of the identified signature directly involves highly demanding energy metabolism pathways for proliferation and metastatic state. Furthermore, comparative signaling pathway analysis showed a positive association with EGFR and Inflammatory pathway and negative association with p53 pathway. Moreover, UBC, AKT1, HIF1A were identified as significant hub proteins with differentially expressed genes PPI network. Conclusion: Overall the study showed insights into the molecular mechanism and modulated signaling pathways underneath cancer proliferation in hypoxic state. Also, our results disclose new therapeutic path which could serve as targets for cancer treatments.

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PP15 | EFFECT OF PH AND TEMPERATURE ON BIOLOGICAL SYNTHESIS OF GOLD AND SILVER NANOPARTICLES FROM *ACACIA SINUATA* PLANT EXTRACT

Rajkumar S. Meti[1] and Shivayogeshwar E. Neelagund[2]

[1]Department of Biochemistry, Mangalore Universit y, P G Centre, Chikka Aluvara
Kodagu, Karnataka - 571232

[2]Department of PG Studies and Research in Biochemistry, Jnana Sahayadri Kuvempu University, Shankarghatta, Karnataka -577451 India.

Biological synthesis of nanoparticles (NPs) has more advantage then the chemical synthesis because of its lesser side effects and faster synthesis. *Acacia sinuata* a medicinal plant, which belongs to family *Mimosaceae* grows in abundance in the tropical jungles of India, especially in the Deccan region. It is used as a detergent in many parts of India and is revered as a scalp cleanser. The fruit of soap nut has tonic and astringent properties, which are beneficial in the treatment of skin disorders. In the present study effect of pH and temperature on biological synthesis of gold and silver NPs from *Acacia sinuata* plant extract was carried out. The NPs were synthesized at acidic, neutral and alkaline pH and different temperatures of 37^{o}C, 50^{o}C, 70^{o}C and 100^{o}C. Gold and Silver NPs were synthesized at different pH and temperature by treating the plant leaf extracts with gold chloride(1mm) and silver nitrate (1mm) and spectroscopic studies showed the absorption peak at 540nm for gold NPs and 420nm for silver NPs.Gold NPs synthesis was observed more at alkaline pH and at 70^{o}C where as silver NPs synthesis was more at neutral pH and temperature of 50^{o}C .At acidic pH and higher temperature of 100^{o}C there was decrease in NPs synthesis this may be due to the denaturation of enzymes responsible for reduction of metallic gold and silver.

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PP16 | MOLECULAR DOCKING AND THEORETICAL EVALUATION OF ADMET PROPERTIES OF SENKIRKINE, A PYRROLIZIDINE ALKALOID AS POTENTIAL CYCLOOXYGENASE (COX-1, COX-2) INHIBITOR

Sardar Hussain[1], Chandrasekharan Guruvayoorappan*, Komal K.P.[2], Sreenivasa Ennaganti[2]

[1]Asst. Prof., Dept. of Biotechnology, [2]Asst. Prof., Dept. of Biochemistry, Government Science College, Chitradurga.577501, Karnataka.
#Ph.D. Scholar, R&D Centre, Bharathiar University, Coimbatore, 641046, Tamilnadu.
*Asst. Prof., laboratory of Immunopharmacology and Experimental Therapeutics, Division of cancer Research, Regional Cancer Centre, Medical College Post, Thiruvananthapuram,695011, Kerala, India.
[2]Sreenivasa Ennaganti, Department of Bioinformatics, Averinbiotech, Hyderabad, 500044, Telangana.
immunopharmacologyrcc@gmail.com

Aim and Introduction: Inflammation, a defencemechanism and a molecular mediator against harmful stimuli that cause pathological conditions in the body. Alterations in the cascade of inflammatory reactions had an increasing effect on aggragavating various disorders which have enormous impact on public health, with an increasing tendency of mortality. The effective mediators that initiate the inflammatory response are prostaglandins whose synthesis depends on the activity of cyclooxygenase enzymes. Inhibition of prostaglandin biosynthesis targeting the COX isoforms (COX-1 and COX-2) has been extensively studied as a potential for the development of novel therapies for inflammation and its related disorders. Considering the menace of several side effects with the initial anti-inflammatory drugs targeting COX enzymes, consequential efforts are ongoing to characterize plant derived compounds as new COX inhibitors for therapeutic intervention. Method: In view of this point, we subjected a pyrrolizidine alkaloid, Senkirkine to reveal its potentiality through molecular docking studies with COX-1 homology model and COX-2 structure. Docking was performed by DS LibDock module. Result and Discussion: Our docking analysis afforded insight information of the binding interactions of Senkirkine with both of the COX enzymes. The compound had a dock score of 71.043 K.cal/mol making a single hydrogen bond with COX-1 and had a dock score of 101.422 K.cal/mol making two hydrogen bonds with COX-2. Furthermore, the predicted structural interactions information will be helpful for future studies that might be utilized for the molecular recognition process of selective derivatives of this compound as COX inhibitors. Finally, ADMET screening of the compound was carried out to find its safety profile.

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PP17 | SYNTHESIS AND CHARACTERIZATION OF ZNO NANOPARTICLES BY SOL-GEL METHOD AND SURFACE DIRECTING AGENT ASSISTED SOL-GEL METHOD FOR THE PHOTO CATALYTIC REDUCTION OF CR^{+6} TO CR^{+3}

[1]Shruthi, Ravishankar T.N.
Dept. of Chemistry, Jnana Kaveri PG Centre, Mangalore University, Chikka Aluvara

ZnO Nano particles a photo catalyst was synthesized by normal Sol-Gel method and Surface directing agent assisted Sol –Gel methods, Surface directing agent used was N-Cetyl-NNN-Trimethyl ammonium bromide (HT-AL). The prepared photo catalyst been characterized by various characterization techniques. The X-Ray diffraction pattern reveals hexagonal wurzite structure for both the materials.The particle size and the band gap evaluated by X-ray method was found to be 35nm and ~3.37eV for normal Sol-Gel method and 30nm and ~3.2eV for Surface directing agent assisted sol-Gel method respectively.EDX spectra showed the presence of Zinc and Oxygen as the major elements.FTIR indicated a significant peak at around 425cm-1 and 510cm-1 for Sol-Gel method and Surface directing agent assisted Sol-Gel method indicating Zn-O vibrational frequency.

SEM image of ZnO Nanoparticles showed agglomeration and aggregation for the species prepared for Sol-Gel method whereas SEM image of ZnO by Surface directing agent assisted Sol-Gel method shows less agglomeration with cage like porous like networks. This kind of morphology is very usefull during the adsorption and absorption of $K_2Cr_2O_7$ during photocatalytic reduction. TEM image of ZnO Nano particles by normal Sol-Gel method showed irregular shaped agglomerated nanopartcles,whereas in the case of Surface directing agent assisted Sol-Gel method showed less agglomeration with spherical shaped morphology The prepared ZnO nanopartices by normal Sol-Gel method and Surface directing agent assisted Sol-Gel method are tested for photo catalytic reduction of

Cr^{+6} to Cr^{+3}.Here effect of $K_2Cr_2O_7$ concentration,Catalytic load,pH, light source and recyclability on the photocatalytic reduction of Cr^{+6} to Cr^{+3} are examined and results showed that as compared to that of normal Sol-Gel method,ZnO nanoparticles prepared by Surface directing agent assisted Sol-Gel method exhibited higher photo catalytic reduction of Cr^{+6} to Cr^{+3} and also exhibits the higher recyclability uses.

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PP18 | **SELECTIVELY CYTOTOXIC PIGMENT FROM *FUSARIUM CHLAMYDOSPORUM***

Soumya. K*, Narasimha Murthy K† and Sharmila. T

*Department of Microbiology, Field Marshal K. M. Cariappa College, A constituent college of Mangalore University, Madikeri - 571201, Kodagu (D), Karnataka, India.

†Department of Studies in Biotechnology, University of Mysore, Manasagangothri, Mysore - 570 006, Karnataka, India.

Department of Microbiology, Jnanabharathi Campus, Bangalore University, Bangalore – 560056, Karnataka, India.

soumyanukrish@gmail.com

Fusarium chlamydosporum was isolated from a soil sample and was identified based on morphological and molecular methods. The purified pigment was characterized as a poly unsaturated fatty acid ester by various analytical studies which included C – NMR, H – NMR, FTIR, UV- Vis spectrum and LCMS analysis. This pigment was further screened for anti-cancer activity against MCF 7, HCT 116, PC-3 and compared with HEK 293 & CHOK cells by MTT assay. The purified pigment exhibited selective cytotoxicity to MCF 7, HCT 116 and PC-3 cell lines as compared to HEK 293 & CHOK cells with IC 50 value of 62 µg/ml, 220 µg/ ml and 300 µg/ ml for MCF-7, HCT116 and PC-3 cells respectively. This property has high potential in cancer therapy and the pigment was found to be a promising metabolite in anti-cancer research. Further cell death mechanism was studied with respect to Bax, Bcl – 2, survivin and β - actin genes and the expressional studies supported increase of apoptotis in MCF 7 cells treated with the pigment. Lipid peroxidation assay conducted did not reveal any promising anti-oxidative property but however it was found that pigment treatment reduced the lipid peroxidation in the cells treated with hydrogen peroxide by 0.3%. The overview of these investigations suggests the potential of pigment to be used in pharmaceutical and cancer researches. Although these conclusions are based on very preliminary studies, it proves to be an important step towards understanding the properties and potential of this pigment for its further exploitation.

PP19 | EVALUATION OF PHYTOCHEMICALS AND FREE RADICAL SCAVENGING PROPERTY OF *ALTERNANTHERA SESSILIS* LEAVES AND STEM IN VARIOUS EXTRACTS

V. Sujatha* and A. Venkatesan

Phytochemistry Lab, Department of Chemistry, Periyar University, Periyar Palkalai Nagar, Salem 636011, Tamil Nadu, India.

chemsujatha888@gmail.com

Objective: Medicinal plant contains enormous phytochemicals which plays an important role in the prevention and treatment of harmful diseases in human. The present research was aimed to identify the metabolites and evaluate the *in vitro* antioxidant activities of the *Alternanthera sessilis* (F: *Amaranthaceae*) leaves and stems in various extracts. Experiments: The *Alternanthera sessilis* leaves and stem various extracts were studied for phytochemical screening, total phenolic, flavanoid and tannin contents. Antioxidant properties by different *in vitro*

assays like as DPPH•, hydroxide, nitric oxide radical assays, reducing power and total antioxidant activity were evaluated. GC-MS analysis indicated the various bio-constituents present in the extract. Antibacterial activity was studied to prove its pharmacological properties. Results: The phytochemical screening showed the presence of numerous phyto-constituents in all the extracts. The quantitative studies of both leaves and stem of *Alternanthera sessilis* exhibited higher amount of phenolic, flavonoids and tannin contents in leaves ethyl acetate extract when compared to other extracts. *In vitro* study indicated that the ethyl acetate extract of the *Alternanthera sessilis* leaves possess significant scavenging activity against DPPH•, hydroxyl, nitric radical and higher reducing ability was also observed. Likewise, ethyl acetate showed better total antioxidant activity than other extracts. GC-MS analysis of the ethyl acetate extract of leaves of *Alternanthera sessilis* reveals the presence of medicinally valued bioactive components. The antibacterial activity of *Alternanthera sessilis* leaves ethyl acetate extract against *Bacillus subtilis* and *Serratia marcescens* exhibited significant inhibition. Conclusion: Our findings of *Alternanthera sessilis* leaves ethyl acetate extract shows it may possess significant antioxidant and antibacterial properties paving way for the new avenues of the pharmacological properties.

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PP20 | BIOLOGICAL SYNTHESIS OF SILVER NANOPARTICLES FROM *Centella asiatica L* AND ITS TREATMENT TO *Trigonella foenum graecum L.*

Thrupthi G.N.[A], Chandrashekara K.T. [b]
Department of Applied Botany
Mangalagangothri, Mangalore University
Principal Scientist, Institution of Excellency, University of Mysore.

Generally, Biosynthesis of nanoparticles is relatively new emerging field of nanotechnology which has economic and eco-friendly benefits over Chemical and Physical processes of Synthesis. In the Present study, Silver nanoparticles were synthesized using *Centella asiatica L* extract. And investigated the effects of silver nanoparticles on the plant growth parameters such as root shoot ratio, percentage of germination, germination vigour and biochemical parameters like protein and carbohydrates concentration. The Formation of Silvernanoparticles was characterized by using UV-Vis Spectrophoto meter and the morphology of silver nanoparticles was confirmed by Scanning Electron microscopy (SEM) and X Ray Diffraction Analysis (XRD). The fenugreek (*Trigonella foenum graecum L*) seeds were treated with 4 different concentrations (0mM/ml, 2mM/ml, 4mM/ml, and 8mM/ml). After germination, regular supply of respective concentration of silver nanoparticles were provided, The lower concentrations of AgNPs promoted seed germination and early seedling growth in Fenugreek, however at higher concentrations adverse effects are found. Thus the synthesized AgNPs increases the germination in Fenugreek, Further it can be applied in various Industrial fields and are addressed in some of the Enivronmental problems.

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PP21 | SYNTHESIS OF 6-(4-SUBSTITUTEDPHENYL)-4-(5-SUBSTITUTED-2-PHENYL-1*H*-INDOL-3-YL)-1, 2-DIHYDRO-2-OXOPYRIDINE-3-CARBONITRILE ANALOGOUS AND THEIR ANTIMYCOBACTERIAL, ANTIOXIDANT AND ANTICANCER ACTIVITY AGAINST TUMOR CELL LINES

Vaijinath A. Verma[1]* and Rajkumar S. Meti[2]

[1]Department of Chemistry, S. S. Margol College of Arts, Science and commerce Degree College, Shahabad-585 228 KalaburagiKarnataka, India

[2]Department of Biochemistry, Mangalore University, P.G. Centre ChikkaAluvara, Kodagu, Karnataka, India.

A part of systematic investigation, a novel series of 6-(4-Substitutedphenyl)-4-(5-substituted-2-phenyl-1*H*-indol-3-yl)-1, 2-dihydro-2-oxopyridine-3-carbonitrile analogous were synthesized and appraised for their *in vitro* antimicrobial, antioxidant antimycobacterial and anticancer activity against three tumor cell lines. The selected compounds were assigned for their pharmacological activity i. e. structure–activity relationship (SAR). Amongst the compounds tested 5a has demonstrated a degree of antibacterial and radical scavenging activities. Compound 4a revealed efficient to fantabulous antifungal activity. It is worth noting that compound 5g was most active antimycobacterial agent against H37Rv strain *M. tuberculosis*. In case of anticancer activity compounds 4e and 5e against all the three tumor cell lines manifested remarkable cytotoxic activity, Ferrous ions (Fe^{3+}) reducing antioxidant power (FRAP) was shown by compound 5e.

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PP22 | STUDY ON PHYSICOCHEMICAL CHARACTERISATION OF CROSSLINKED POLYVINYL ALCOHOL /K-CARRAGREENAN HYDROGEL FILM FOR BIOMEDICAL APPLICATION

Anand V. Nasalapure[1], Raju K.Chalannavar[2*], Ramesh S. Gani[3], Deepak R Kasai[4]

[1,3]Department of Industrial Chemistry, [2]Department of Applied Botany, Mangalore University Mangalgangothri- 574 199 Karnataka, India.

[4]Deprtment of Chemistry, School of Engineering and technology, Jain University, Jakkasandra-562112 Karnataka,

drrajkc@gmail.com

The present research work was focussed on the fabrication of crosslinked hydrogel film based on poly (vinyl alcohol) (PVA) and k-Carragreenan (KC) with different weight ratio by solvent casting and evaporation method. The hydrogel was crosslinked with glutaraldehyde and characterized by using scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), thermogravimetric analysis (TGA), and universal testing machine (UTM). The results indicated FTIR revealed that good molecular interaction among the polyvinyl alcohol and k-Carragreenan. Addition of KC increased the tensile strength of the hydrogel film upto (4.4MPa) for PVA/ KC 2. SEM revealed that morphology of the hydrogel film showed homogenous phase. Moreover, increased stability of rate of thermal degradation with increased KC. Further swelling behaviour and biodegradation also performed under PBS (Phosphate Buffer Saline) media. Resulted enhanced the stability of water uptake and biodegradation rate decreased as increase in KC. The results obtained from study showed moderate swelling, degradation, good mechanical properties and molecular interaction of the PVA/KC hydrogel film, might have advantage in the field of biomedical such as drug delivery and tissue engineering applications.

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PP23 | GREEN NANOTECHNOLOGY – A NOVEL APPROACH IN EMERGING MEDICAL SCIENCE

Hemamalini V.[1]*, Anandhalakshmi J[2] and Bakyalakshmi G[2]
Assistant Professor[1]*and Research Scholar[2]
Department of Plant Biology and Plant Biotechnology, Quaid-E-Millath Government College for Women, Chennai - 600 002, Tamil Nadu, India.

Green nanotechnology is an application of nanotechnology, has two main goals; producing nanomaterials without harming the human health and producing nano - products that provide solutions. Current study was designed for green synthesis of silver nanoparticles (AgNPs) and their biological evaluation. Our researchers are developing a technique to kill drug resistant bacteria, fungi using the quantum dots and biosynthesized silver nanoparticles. This method may lead to improved cleaning of instruments in hospital settings. One of the main issues in the medical field and clinical practice is the development of novel effective treatments against infection caused by antibiotic resistant bacteria. The effective antimicrobials are the use of silver nanoparticles (Ag – NPs). In this study, we report a green one-pot synthesis method that uses *Averrhoa bilimbi* and *Quisqualis indica*leaf extract as a reducing and capping agent, to produce AgNPs with applications as therapeutic agents to treat infections. The main aim of this study is to evaluate the comparison of antimicrobial efficacy and antioxidant of silver nanoparticles synthesized from aqueous plant extracts of *Averrhoa bilimbi* and *Quisqualis indica*. The Ag-NPs were characterized using transmission electron microscopy (TEM), Ultraviolet–visible, and Fourier transform infrared spectroscopy and X-Ray diffraction analysis. The antioxidant activity of both extracts was analysed by DPPH, FRAP, SOD and NO_2 assays. Biosynthesized AgNPs of *Averrhoa bilimbi* exhibited strong antioxidant activity as well as showed potent antimicrobial activity against some human pathogenic bacteria and fungal strainswhile AgNPs of *Quisqualis indica* showed enhanced antimicrobial activities than the AgNPs of *Averrhoa bilimbi.* Hence AgNPs of *A.bilimbi* was subjected to further cytotoxic analysis. The recognized bioactivity established by the synthesized AgNPs directs towards the clinical use as an antioxidant, antibacterial and cytotoxic agent.

PP24 | KETOAMIDE ANALOGS OF CIPROFLOXACIN (ANTIBACTERIAL DRUG)

Atul Kumar,[†] and Qazi Naveed Ahmed [†*]
[†]Medicinal Chemistry Division, Indian Institute of Integrative Medicine (IIIM), Jammu, India.
atulrana8490@gmail.com

The fluoroquinolones are a family of synthetic, broad-spectrum antibacterial agents with bactericidal activity. The activity is perhaps due to its capacity to block DNA replication via inhibition by forming a ternary complex with a DNA molecule and gyrase and topoisomerase IV enzymes, thus blocking bacterial DNA supercoiling. Lescher and colleagues in 1962 discovered nalidixic acid as the first quinolone based drug that was widely used orally administered agents available for the treatment of serious infections caused by Gram-negative bacteria, including Pseudomonas species.[1-2] Later, Fluoroquinolones emerged out to be a class of antibiotics with potent bactericidal, broad spectrum activity against many clinically important pathogens which are responsible for variety of infections including urinary tract infections (UTI), gastrointestinal infections, respiratory tract infections (RTI), sexually transmitted diseases (STD) and skin infections.[3-5] In general, N acylation, always use to increase the non-polar character and hence led to decreased drug likeness. In this direction, we planned to synthesize different Ketoamide analogues of ciprofloxacin. α-Ketoamides are important units in biologically active molecules, synthetic drugs, and drug candidates. They are well reported to have better stability than normal amides and due to the presence of 2-oxo group have polar nature. In this regard, we aim to generate different Ketoamide based analogues.

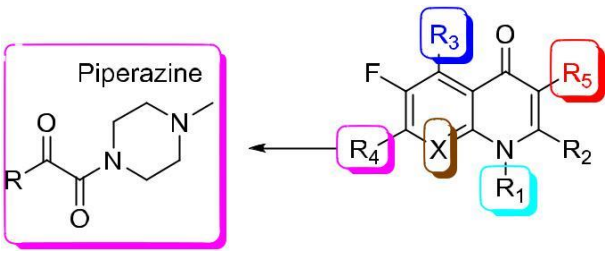

Figure 1: Summary of our work

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PP25 | VOLTAMMETRIC RESOLUTION OF DOPAMINE AT MODIFIED CARBON NANOTUBE PASTE ELECTRODE

C. Raril and J.G Manjunatha*, Edwin Santhan D'Souza

of Chemistry, FMKMC College, Madikeri, Mangalore University Constituent College Karnataka, India

An electrochemical sensor based on poly threonine modified carbon nanotube paste electrode was developed for the determination of dopamine (DA). Electropolymerization method was used to prepare poly (threonine). The electrochemical detection of DA was studied by cyclic voltammetry (CV) and differential pulse voltammetry (DPV). Developed sensor shows intensed peak for the electrooxidation of DA compare to bare carbon nanotube paste electrode (BCNTPE). The linear plot of DA was obtained from 1×10^{-5} to 5×10^{-5} M, with the detection limit of 7.7×10^{-7} M and limit of quantification of 25×10^{-7} M. The practical application of the developed sensor was verified as exact and sensitive for the resolution of DA in pharmaceutical sample

PP26 | ROOT NODULE ENDOPHYTICRHIZOBACTERIA FROM FABACEAE PLANTS

Darsha S. and M. Jayashankar

Department of Studies and Research in Microbiology, Mangalore University Post Graduate Centre Jnana Kaveri, Campus, Kodagu – 571232, Karnataka, India.

Biological nitrogen fixation occur by root nodule bacteria.Almost all root nodule forming plants comes under Fabaceaefamily.The absorbable forms of nitrogen are nitrate, nitrite and ammonia.In the present study, root nodule bacteria were isolated and identified from three leguminous plants of Fabaceae namely (1)*Cajanus cajan* (2)*Lablab purpureus*(3)*Vigna unguiculata* collected from Thiruvalathur region,Kerala.These grains are commonly consumed in India,Asia and Africa.These crops are well nodulated in Indian soils.But much studies were not carried about their nodulated microbial diversity.About 51% of root nodulated bacteria were isolated from these 3Fabaceae plants using PCR-RFLP of 16S rRNA genes.*Rhizobium spp* and *Bacillus spp*., were found to be dominant.

C. cajan, *L.pupureus* and *V.unguiculata* in different soil types of Kerala were diverse with respect to their root nodules. These sequences obtained from isolates were matched with the nucleotide database of genebank using BLAST program. The root nodule endophyticbacteria not only benefits the host plants but also the subsequent non -leguminousinter-crops such as rice and wheat (Biwas etal,2000). These *Rhizobium* and other bacteria may be replaced as biofertilizers and also as PGPB to safeguard the soil health in turn of plants health.

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PP27 | EVALUATION OF NEUROPROTECTIVEPOTENTIAL OF*CELASTRUSPANICULATUS*SEED EXTRACT AGAINST MPP^+INDUCED OXIDATIVE INJURYIN SH-SY5YCELLS

Divya Sankaramourthy[1*], Muthukamalam vinnarasi[2], Kavimani Subramanian[1], Mahalakshmi Gunasekaran[1], Uma Maheshwari M[2], Sudha Rani Sadras[2]

[1]Department of Pharmacology, Mother Theresa Post Graduate and Research Institute of Health

Sciences, Indira Nagar, Gorimedu, Puducherry - 605006. [2]Department of Biochemistry and Molecular Biology, School of Life Sciences, Pondicherry University, R. V Nagar, Kalapet, Puducherry - 605014.

The seeds and oil of *Celastruspaniculatus*are known fortherapeutic efficacy in indigenous medicinal systems for cognitive enhancement and the present study was designed toinvestigate the neuroprotective effect of *Celastruspaniculatus* seeds against the neurotoxin 1-methyl-4-phenlypyridinium (MPP^+) induced damage in SH - SY5Y neuroblastomacell line.Methods:The protective effect of CPME against MPP^+ mediated damage in SH-SY5Y cells was assessed by MTT assay by pretreating the cells with CPME at 2 different concentrations (10 and 25 µg/mL) 24 h preceding MPP^+ treatment. The percentage of cell viability was determined and MPP^+ induced apoptotic changes were assessed by staining the cells with acridine orange/ethidium bromide (AO/EB), propidium iodide (PI) and 4‘ 6 - diamidino- 2 -phenylindoledihydrochloride (DAPI).Changes in the mitochondrial membrane potential and intracellular ROS were assessed by staining respectively with rhodamine 123 and 2‘, 7‘ - dichlorofluorescindiacetate(DCFDA).Results: CPME showed appreciable protective effects against MPP^+induced cell death with significant improvement in cell viability and the effect was well pronounced at the concentration of 25µg/mL.Fluorescence microscopic image analysis indicated thatMPP^+ induced changes including cell shrinkage, condensation / fragmentation of nuclear materialwere ameliorated by pre - treatment with CPME. Conclusion: Data obtained from this work signifies the neuroprotective effects of *Celastruspaniculatus*seed extract. (CPME) and provides avenue for identification of novel therapeutic lead molecules for neurodegenerative diseases.

PP28 | SCREENING OF POPULATION AND EXTRACTION OF BIOCOMPOUNDS FROM *COCCINIA INDICA* AN IMPORTANT ANTI DIABETIC, ANTICANCEROUS AND HYPOLIPIDEMIC MEDICINAL PLANT OF TROPICS- A REVIEW

[1]Ashwini S. and [2]Manjula Shantaram

[1]Principal, Swamy Vivekananda Composite Pre-University College, Yelahanka, Bangalore

[2] Department of Studies in Biochemistry, Mangalore University, Post Graduate Centre ChikkaAluvara, 571 232, Kodagu, Karnataka, India

manjula59@gmail.com

Coccinia indica (Bimba, kanduri, Cucurbitaceae) is famous for its hypoglycemic and anti-diabetic properties in Ayurvedic system of medicine. Other applications include the therapy for various conditions such as skin diseases and gonorrhoea. There are many patented formulations derived from *Coccinia indica,* which are now distributed increasingly all over the world. This has given rise to a concomitant increase in research on the phytochemical constituents and biological activity of *Coccinia indica*. Therapeutical benefits include hypoglycemic activity, Antioxidant activity, Anti-inflammatory activity, Analgesic activity, Antipyretic activity, Larvicidal activity, Hypolipidemic activity, Hepatoprotective activity, Antituberculosis activity and Anti-diabetic activity.

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PP29 | EFFECT OF ENDOPHYTIC FUNGUS FROM *PSIDIUM GUAJAVA* L. (WHIT FRUIT) AGAINST MICROBIAL PATHOGENS

Eyob Chukalo[1] and Raju Krishna Chalannavar[2]

[1] Department of Biosciences, [2] Department of Applied Botany, Mangalore University Mangalagangotri-574199, Karnataka;

drrajkc@gmail.com

The endophytic fungi are those fungi asymptomatically reside in the internal tissue of the different parts of the plants. They are a natural producer and reservoir of a plethora of

biologically active metabolites. Natural products are healthy alternatives, devoid of side effects, to combat health problems. The secondary metabolites produced by endophyte has got wide attention due to its use for novel drug discovery and other various industrial applications. This study was conducted to isolate the endophytic fungi from the leaf samples of *Psidium guajava*, prospect the bioactive secondary metabolites from endophytic fungus and to evaluate the antimicrobial activities of the endophytic fungus extract. The endophyte was isolated after surface sterilization of leaf by 5 % Sodium hypochlorite (NaOCl). The endophytic isolate was screened for production of the secondary metabolites using solid state and submerged fermentative cultivation at ambient temperature. The isolate, identified as *Fusarium* sp. by cultural characteristics, showed the ability to produce biologically active metabolites. Inhibitory effects of the endophyte extract against four clinical pathogens have been screened by agar well diffusion method. The ethyl acetate crude extract of this endophyte has inhibited the growth of the tested Gram-positive and Gram-negative bacteria. The extract displayed the broad spectrum of inhibition against all tested bac teria at 80 mg/mL for *S. aureus* (14.00±0.91mm), *B. subtilis* (16.00±1.11mm), *E. coli*, (23.00 ±3.01mm) and *P. vulgaris* (14.00±1.31mm). The extract showed high inhibitory, equivalent to standard vancomycin, activity at 80 mg/mL against *E. coli*. The lowest inhibitory activity of the metabolic extract was observed against the tested bacteria *P. vulgaris* (8.00±1.31mm) at 20 mg/mL. The crude extract of fungus presented moderate and least inhibitory activity against *Saccharomyces cerevisiae*, *Trychophyton*, and *Candida albican.* Overall, the extract proved potential antimicrobial activity. The fungus could be an ideal resource for the biological prospection of industrial lead compounds for human welfare.

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PP30 | MODULATION OF CATALYTIC ACTIVITY OF CATALASE BY ACCUMULATION OF OSMOLYTES UNDER OXIDATIVE STRESS DISORDERS-A BIOPHYSICAL AND COMPUTATIONAL APPROACH

Fasil Ali[1], Jafar Khaliq Lone[1], Tanveer A. Dar[2], K.S. Chandrashekharaiah[1]

[1]Department of Studies and Research in Biochemistry, Jnana Kaveri campus
Mangalore University

[2]Department of Clinical Biochemistry, University of Kashmir, Srinagar

Faisalclbiochem@gmail.com

Oxidative stress is involved in almost all major diseases grouped as oxidative stress disorders including Diabetes, Alzheimer's, Parkinson's etc., Osmolytes are small molecular weight organic compounds accumulated by cells under stress conditions like temperature, salinity, oxidative stress, urea, pH etc. The proteins maintain their structural integrity due to the presence of osmolytes in stress environment. Among different classes of osmolytes, polyol class has been found to have strong correlation with oxidative stress disorders. An increased concentration of *myo*-inositol, a polyol osmolyte, has been observed in Alzheimer's, diabetes, etc. Osmolytes in general protect the structure and function of proteins under stress conditions by modulating the folding energy landscape of the protein both at thermodynamic as well as structural level. It has been observed that under oxidative stress, proteins lose their native structure and thus have a compromised functional activity. Among these proteins, antioxidant protein systems including Catalase, Glutathione

peroxidase, SOD is one such class which has increased expression during oxidative stress disorders. Interestingly in these disorders antioxidant enzymes systems have been found to be perturbed. Keeping in view, the importance of the antioxidant enzymes under stress conditions, the ability of the osmolytes to protect proteins under stress conditions and the co-existence of osmolytes in stress disorders, this study was carried out to elucidate the effect of two polyol osmolytes [*myo*-inositol (MI) and mannitol] on the structural and functional activity of catalase. We observed that MI decreases the overall enzymatic activity of catalase ($\uparrow K_m$ and $\downarrow V_{max}$). Results obtained in kinetic studies were well supported by structural studies where in it was found that MI unfolds the buried hydrophobic patches (Fluorescence studies), destabilized heme pocket (soret absorption) and decreased thermal stability (T_m) of the protein. In case of mannitol, an increase in enzyme activity was observed with a secondary structure formation (CD studies), compaction of the tertiary structure and increased thermal stability. In-silico studies carried out strongly support our results with close association of MI with hydrophobic residues of active site center/heme channel of catalase as compared to mannitol. All these experimental studies conclude that *myo*-inositol destabilizes catalase by decreasing its tertiary structure, perturbing active site and thus decreasing its functional activity. While as mannitol increased the stability and functional activity of catalase by increasing the secondary as well as tertiary structure of the protein. Our present study strongly supports the fact that decrease in the efficiency of the anti-oxidant protein system of the cell/organism may be due to co-existence of *myo*-inositol with oxidative stress disorders.

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PP31 | ANTIMICROBIAL AND ANTIOXIDANT ACTIVITIES OF GRAPE SEED EXTRACTS

Fathaunnisha S.[1] , Noorul Hathiya A.[1], and Hemamalini V.[*]

[1]Research Scholar, [*]Assistant Professor, Department of Plant Biology and Plant Biotechnology
Quaid-E-Millath Govt. college for Women, Chennai-600 002, Tamil Nadu, India.

Plant based research has now been on the surge due to increased awareness about the harmful side effects of many commonly used drugs and medicines. Hence research has been fueled in various arenas to look for natural remedies and solutions to many common problems. Anti-microbial resistance is now a grave problem. It is responsible for claiming many lives. Cancer is now a disease rampantly spreading. It is being attributed to our changing lifestyles. Many harmful chemicals we are exposed to on daily basis are known to be carcinogenic. Fruit seeds have been a valuable source for maintaining human health. The use of fruit seed extracts for antimicrobial properties can be of great significance in therapeutic treatments. In this study, the seeds of grapes were used. The seed of grapes were collected. The samples were shade dried for a week. After drying, the samples were grounded and stored for further analysis. The samples were extracted with ethanol using Soxhlet apparatus. Phytochemistry assay, antibacterial activity, antifungalactivity assay, antioxidant activity and cytotoxicity assay of grape seeds extract were determined. The study showed that anticancer activity of grape seed extract was very effective.

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PP32 | SDS MODIFIED CARBON NANOTUBE PASTE ELECTRODE FOR VOLTAMMETRIC INVESTIGATION OF RIBOFLAVIN

Girish Tigari [A] , J. G. Manjunatha [a*], C. Raril [a], N. Hareesha [a,]

[a*] Department of chemistry FMKMC College Madikeri, Mangalore University Constituent College, Karnataka, India.

Sodium dodecyl sulfate modified carbon nanotube paste electrode (SDSMCNTPE) was developed for the electrochemical analysis of Riboflavin (RF) in phosphate buffer solution (PBS) of pH, 7.0 by cyclic voltammetry (CV). It was shown that SDSMCNTPE yields high current

response towards RF as compared to the bare carbon nanotube paste electrode (BCNTPE). Key factors were tested to modify the conditions of RF determination. The impact of surfactant concentration, pH, scan rate and concentration of RF on the oxidation peak current values were evaluated. The RF oxidation peak detected at -440 mV and reduction peak at -575 mV vs. SCE. The SDSMCNTPE showed good repeatability, reproducibility, stability, high electrochemical sensitivity in its voltammetric response and detection limit of order 9.25×10^{-8} M and limit of quantization 3×10^{-7} M.

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PP33 | GREEN SYNTHESIS OF SILVER NANOPARTICLES USING *VIBURNUM NERVOSUM* LEAF EXTRACT AND ITS POTENTIAL APPLICATION FOR CANCER THERAPEUTICS.

Irfana Zahoor

Research Scholar, Jaipur National University

A simple, viable and fast approach for the green synthesis of silver nanoparticles (AgNPs) using leaf extract of *Viburnum nervosum* and its anticancerous activity, toxicity and anticancer efficacy has been demonstrated in this study. Characterization of synthesized AgNPs was done using various techniques like UV- Visible Spectroscopy (UV- Vis), Fourier Transform Infrared (FT-IR) Spectroscopy, Transmission Electron Microscopy (TEM), Field Emission Scanning Electron Microscopy (FESEM), X- Ray Diffraction (XRD) Analysis, Selected Area Electron Diffraction (SAED) Analysis and Energy Dispersive X- ray (EDX) Spectrum. Surface plasmon spectra for AgNPs showed absorbance peak at 445 nm with dark brown color. FTIR investigation revealed the presence of biomolecules which act as effective reducing and capping agents in converting silver nitrate to AgNPs. The synthesized AgNPs were polydispersive, mostly spherical with size in the range of 12- 17 nm. Biologically synthesized nanoparticles were found biocompatible towards MCF-7 and A431 cancer cell lines. The toxicity was checked against normal fibroblast L929 cell line. The IC_{50} value was 50 µg/ml. Also, doxorubicin (DOX) loaded AgNPs increased the bioavailability of the drug as compared to free drug suggesting use of AgNPs as drug delivery vectors.

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PP34 | CHARACTERIZATION OF THE MAJOR PHYTOCONSTITUENTS OF " NKO I"- *SemecarpusAnacardium* –SIDDHA HERB USING TANDEM MASS SPECTROMETRY

K. Mohan[1]; K. Rangasamy Siddhar[2], V.Viswanathan[1] and D.Velmurugan[1]

[1]CAS in Crystallography & Biophysics, University of Madras, Guindy Campus, Chennai.

[2]Konganar Vedic Academy and Herbal Research Centre, Palani, India.

Serankottai is one of the everlasting traditional siddha medicines used by Konganar Vedic Academy and Herbal Research Centre, Palani, Tamil Nadu for the treatment of curing lung cancer. *Semecarpus anacardium* is the botanical name of serenkottai, the physical appearance of the serankottaiis with a smaller bulb, whichis attached on the upper part of the bigger bulb. The upper and lower bulb portions were detached and crushed using the home appliance mixer and obtained them as a dark thick paste form. The paste obtained from the upper and lower bulb portions were separately soaked in the solventmethanol for 24Hrs. Both themethanolicextracts were subjected to LCMS analysis using Shimadzu LCMS-8040 Triple Quadrupole Mass Spectrometer to identify the molecular mass of the major phytoconstituents. The novel observation is that, the major compound Tetrahydroamentoflavanone with MW 542 Da observed as 58.16%of HPLC purity in the methanolic extract of lower bulb is completely absent in the methanolic extract of the smaller upper bulb. The identified other two major compounds namely3-((8E,10E)-pentadeca-8,10-dienyl) benzene-1,2-diol with MW316 Da and 3-((E)-pentadec-10-enyl)benzene-1,2-diolwith MW318 Da are found to be

present in both the extracts. The HPLC purities of these two compounds are 18.89% & 16.19% in the lower bulb and 35.26% & 30.85 in the upper bulb, respectively. The *in-silico* analyses have been carried out for the identified compounds using the cancer related protein targets and the induced-fit docking Glide energy score showed that the molecular interactions are better than the co-crystal. All the three identified major compounds were subjected to prep-HPLC purificationand obtained the HPLC purity 99.6% of compound 542Da, 95.22% of compound 318Da and 80.31% of compound 316Da. The cell-line studies are being carried out for the isolated pure compounds using cancer cell-lines

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PP35 | PROFILING OF HYDROLYTIC ENZYMES AND PROTEINS DURING GERMINATION OF *ARTOCARPUS HETEROPHYLLUS* SEEDS

Krupa S., Siddalinga Murthy K.R*

Jnana Bharathi Campus, Bangalore University, Bangalore- 560090

Hydrolytic enzymes such as Esterases, Acid Phosphatases, α and β- galactosidases are studied during each day of germination. The seeds were sowed in coco pith - sand mixture (1:1) and the endosperm is collected on every alternate day till the origin of first set of leaves. The extractions were carried out with chilled phosphate and acetate buffer for Esterases, Acid Phosphatases, α and β- galactosidases respectively, centrifuged and the supernatant is collected. The supernatant is then assayed for the total activity and the total protein of all the specified enzymes. Enzyme assays were carried out using substrates like α- napthyl acetate, p-nitrophenyl phosphate, o- nitrophenyl β – D galactopyranoside and p- nitrophenyl α – D galactopyranoside respectively. Maximum activity of the enzymes were recorded and the days which gave the maximum activity are recorded. Acid phosphatases showed greater activity of 1.587 µmoles/min/g tissue and a total protein of 14.77 mg/g on second day while α-galactosidases gave an activity of 0.353 µmoles/min/g tissue on the 12th day of germination. Acid phosphatases and α- galactosidases at maximum activity days were considered for further purification, characterization and structural elucidation.

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PP36 | A COMPARATIVE CYTOTOXIC STUDY OF BIOSYNTHESIZED SILVER AND COPPER NANOPARTICLES AGAINST VERO CELL LINE

L. Priya[1], S.Meera[1*], and Hemamalini.V[*]

Research Scholar[1], Student[1*], and Assistant Professor[*]

Department Of Plant Biology and Plant Biotechnology

Quaid-E-Millath Government College for Women,

Chennai – 600002, Tamil Nadu, India

Hemaraju97@Yahoo.com

This study presents a rapid, low cost, eco-friendly and single step approach for the green synthesis of nanoparticles. The Nanoparticles are used in different areas such as, the electronic industry, medical applications, pharmaceuticals, cosmetics and environmental processes. Development of reliable and eco-friendly process of the synthesis nanoparticles is an important step in the field of Nanotechnology. In this research, an (agrowaste) orange peel extract was used to synthesis silver (Ag) and copper (Cu) nanoparticles. The characterization of optimized AgNPs and CuNPs for its structural and morphological properties were carried out using UV-Vis Spectrophotometer and FTIR spectroscopic techniques, TEM analysis and XRD studies. The Cytotoxic study of synthesized silver and copper nanoparticles were done on Vero Cell Line and toxic free concentrations was estimated. The AgNPs exhibits minimum toxicity against the Vero cell line when compared to CuNPs.

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PP37 | PHARMACOGNOSTIC, PHYTOCHEMICAL AND PHARMACOLOGICAL EVALUATION OF THE LEAVES OF *TALINUM FRUTICOSUM* L. AND *KALANCHOE PINNATA* L.

Laveena K. B*, and Chandra M
Department of Biosciences, Mangalore University, Mangalagangothri, Dakshina Kannada District Karnataka-574 199, India.
*drchandram1@gmail.com

Medicinal plants are resources of new drugs and it is estimated that there are more than 250, 000 flowering plant species. Hence studying of medicinal plants helps to understand plant toxicity and protect human and animals from natural poisons. An attempt was made to analyse the preliminary phytochemicals and to quantify some secondary metabolites, confirmation by TLC and HPLC analysis, antioxidant activity, anti-inflammatory and antimicrobial activity of leaves of *Talinum fruticosum* L. and *Kalanchoe pinnata* L. After evaluation of drug, the leaves of two plants were extracted using methanol solvent. The phytochemical analysis revealed the presence of carbohydrate, protein, alkaloids, saponins, phenols, flavonoids and tannins. *T. fruticosum* L. showed high phenolic, flavonoid, tannin content and antioxidant activity when compared to *K. pinnata* L. Alkaloid, saponin content and anti-inflammatory activity was more in *K. pinnata* L. TLC of methanolic extract showed number of spots and confirms about the various phytochemicals. The presence of polyphenols in leaf extracts was confirmed by differentiation of their retention times and corresponding of UV spectra with those of standard compounds. Methanolic leaf extracts of *T. fruticosum* L. and *K. pinnata* L. showed antibacterial and antifungal activity because of the presence of phytochemicals. The result of the study indicates that the plant extracts may serve as potential drugs to treat various life-threatening disease.

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PP38 | STUDIES ON ANTIBACTERIAL ACTIVITY OF PROTEASE INHIBITORS FROM THE SEEDS OF *CAESALPINIA MIMOSIDES*

M. A. Lekha, Jafar Khaliq lone, K. S. Chandrashekharaiah*
Department of Biochemistry, Mangalore University PG Centre, Chikka Aluvara, Kodagu- 571232 Karnataka, India.
kschandraks@gmail.com

Antimicrobial proteins/peptides play a essential role in the innate host defense mechanism in a wide variety of living organisms including plants, insects, amphibians and mammals. They possess potent antibiotic activity against most microorganisms including bacteria, fungi and many viruses. The increasing incidence of antibiotic resistance of most microbial pathogens is one of the greatest challenges in the modern medicine which triggered considerable interest among the researchers for the isolation and investigation of potent antimicrobial proteins/peptides from different biological sources. Plants produce wide variety of proteins that are involved in defense against pathogens including protease inhibitors and antifungal peptides/proteins. Protease inhibitors were isolated from the soaked seeds of *Caesalpinia mimosides*. Differential extraction of protease inhibitors using different solvents showed maximum proteins (83.6mg/gm) and protease inhibitor activity (5491 TIU/gm) was extracted in 0.05m sodium phosphate buffer, pH7.0. Electrophoretic analysis indicated the presence of two major and two minor isoinhibitors of proteases, three major and seven minor protein bands. The extracts of differential extraction using different solvents (water, 0.05M sodium acetate buffer, pH 5.0, 0.05M sodium phosphate buffer, pH 7.0, 0.5% NaCl, 1% NaCl, 0.05M Tris-HCl buffer, pH 8.0 and Tris-HCl buffer, pH 7.0, 0.1M HCL, 0.1M NaOH) were tested for

antibacterial activity against *Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli,& Bacillus subtilis*. The water, sodium phosphate buffer, pH 7.0 and Tris-HCl buffer, pH 8.0 extracts showed maximum zone of inhibition. From the study its concluded that protease inhibitors act as a potent antibacterial agent. Therefore, Protease inhibitors are inhibiting the growth of a variety of pathogenic as well as non-pathogenic bacteria and its evidence as an excellent candidate for use as the lead compound for the development of novel antimicrobial agents.

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PP39 | PHARMACOGNOSTICAL EVALUATION OF *CURCUMA LONGA* L. LEAVES AND RHIZOME

*Liekitha, Bhagyalaxmi and Laveena K.B
Department of Biosciences, Mangalore University, Mangalagangothri, Dakshina Kannada District Karnataka-574 199, India.
laveenavenkatesh@gmail.com

Medicinal plants are in use for the purpose of treatment of different ailments since centuries. The study was conducted to analyze organoleptic, physicochemical evaluations, phytochemical analysis and TLC to identify different types of bioactive compounds in *Curcuma longa* L. Leaves and rhizome. Curcuma longa is also commonly called turmeric, a flowering plant of the ginger family, Zingiberaceae. Organoleptic analysis shows that leaf powder sample is aromatic and sweet in taste, were as rhizomes are yellowish, with pleasant smell. Physico-chemical evaluations were done by using various parameters like Total ash value, Acid - insoluble ash value, Water soluble ash value, alcohol soluble extractive value, water soluble extractive value, Sulphated ash value and moisture content to know the total amount of material remaining after ignition in leaves and rhizome samples. Function properties of leaves powder had water absorption capacity 7.36±0.076 ml/g, oil absorption capacity 5.03±0.152 ml/g, emulsion property 2.03±0.152%, foam property 12.1±0.1%, bulk density 0.4213±0.0005ml/g, dispersibility 69.33±0.152% and rhizome water absorption capacity 2.4±0.1ml/g, oil absorption capacity 2.1±0.1ml/g, emulsion property 2.11±0.105%, foam property 4.13±0.152%, bulk density 0.667±0.0001ml/g, dispersibility 91.36±0.152% respectively. Solubility test was done using different solvents. The results revealed the presence of bioactive constituents like carbohydrate, protein, saponins, tannins, terpenoids, alkaloids, flavonoids in both alcoholic extract and aqueous extract. These results not only make these *Curcuma longa* L. popular to consume as good food sources but may also be valuable in drug development.

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PP40 | NEUTRALIZATION OF NEURO-INFLAMMATION BY SPLA$_2$IIA INHIBITION FROM ETHANOL EXTRACT OF PIPER NIGRAM L

Lohith N. S.[1], Sophiya P.[2], Dharmappa K. K.
Department of studies in Biochemistry, Jnana Kaveri, Post Graduate Centre Mangalore University, Chikka Aluvara, Kodagu, Karnataka, India-571232 lohithns.1061991@gmail.com

Piper nigrum L. (Black pepper) is the one of the most important spices with pungent pharmaceutical activities. Due to the presence of unique metabolites, black pepper is used as an important ingredient in many traditional medical formulations. The black pepper is rich in potent phenolic acids and antioxidants. It is, therefore, important spice for ameliorating oxidative stress. The phytochemical

studies have demonstrated the components of Piper nigrum as Piperine, Piperamine, Sarmentosine, Sarmentine, Trichostachine, etc. Piperine is also reported to have a wide range of pharmaceutical properties including antibacterial, anti-fungal, hepato-protective, anti-pyretic, anti-inflammatory, anti-convulant, insecticidal, antioxidant, anti-depressant, immuno-modulatory and anti-tumour effects. *Piper nigrum* extract were prepared with different solvents and carried out total phenolic, total flavonoid content, anti-oxidant activity, sPLA$_2$ inhibition and Neutralization of PLA$_2$ induced edema & haemorrhage. Among different solvent extracts of Piper nigrum, ethanol extract showed greater activity and inhibition. The ethanolic extract of Piper nigrum, exhibited the highest free radical scavenging activity in the DPPH method and FRAP assay. Also, s PLA$_2$ inhibition was performed with different concentration of ethanolic extract showing the better inhibition. The ethanolic extract of piper nigrum, in-vivo studies were performed using albino mice, for neutralisation of edema and haemorrhage activity, it showing a very good result for further neurological studies.

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PP41 | ANTI CANCER AND ANTI HIV EFFECTS OF LECTINS FROM MEDICINAL PLANTS; *DIOSCOREA BULBIFERA* AND *ADENIA HONDALA*

Mamta Sharma, Kavita Hiremath, Bale M. Swamy, Shashikala R. Inamdar*
Department of Studies in Biochemistry, Karnatak University Dharwad-580003, India
srinamdar2009@gmail.com

Lectins are the carbohydrate binding proteins known for their several applications. Plant tubers/bulbils are potential sources of lectins. *Dioscoreaceae* or air potato is most widely-consumed yam species and has been used as a folk remedy to treat several ailments including cancer. *Adenia* from passifloracea family are also known for its use as folk medicine. Two lectins from bulbils/roots of these plants have been purified, characterized and studied for their anti cancer and anti HIV effects.

Materials and Methods: Plant lectin(s) from bulbils/roots were purified to homogeneity from *Dioscorea bulbifera* bulbils (DBL) and *Adenia hondala* roots (AHL) by single step affinity chromatography on Mucin and asialofetuin coupled-sepharose column 4B respectively. Glycan array analysis of DBL and AHL performed at CFG, USA. Binding of DBL and AHL to nonmetastatic HT-29, metastatic SW620 and hepatocellular HepG2 cells was determined by flow cytometry and the growth inhibitory effect was evaluated by calcien AM and MTT cell viability assay. Results: DBL and AHL are a single-polypeptide-chain proteins with M_r 24.5 kDa and M_r 31.6kDa respectively as confirmed by SDS PAGE, ESI-MS and MALDI. DBL and AHL have specificity for high mannose complex N glycans and polylactosamine containing N glycans respectively. DBL exhibited strong anti-HIV reverse transcriptase activity with IC$_{50}$ value of 1.3 µg. DBL showed dose and time dependent growth inhibitory effects on HT 29, SW 620 and HepG2 cells with IC$_{50}$ of 110µg, 9.8µg, 40µg respectively at 72h. AHL has only lectin chain and devoid of DNase activity, unlike other RIPs. AHL inhibited HepG2 cell growth with IC$_{50}$ of 4.8 µg at 72h.

Conclusions: Lectins from medicinal plants DBL and AHL have growth inhibitory effect on human colon cancer HT-29, SW620 cells and HepG2 cells with promising potential in cancer and also HIV research.

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PP42 | PRELIMINARY PHYTOCHEMICAL SCREENING, QUANTITATIVE ANALYSIS OF PHENOLICS, AND *IN VITRO* ANTIOXIDANT ACTIVITY OF MEDICINAL CRUDE PLANT EXTRACTS

Manikumar Bollapragada and Manjula Shantaram
Department of Studies and Research in Biochemistry, Jnana Kaveri PG center Chikka aluvara
Mangalore University, Karnataka, 572312, India.

Oxidative stress, which is frequently induced by an overproduction of free radicals (FR), poses a high risk to human health. A molecule that has an unpaired electron is called a free radical, highly reactive, and could causes damages to cellular components such as DNA, or the cell membrane inside human body. Human body produces antioxidants to neutralize free radicals, but human ageing and stress oxidative conditions would increase the formation of free radicals, therefore exogenous antioxidants are needed. *Antigonon leptopus, Artabotrys hexapetalus* and *Allamanda blanchetii* leaves are popular choices in traditional herbal medicine practice. Those plants are traditionally used to treat diabetes milletus, inflammation, cytotoxic, thrombolytic and antimicrobial activities. In the present study leaves of *A. leptopus, A. hexapetalus* and *A. blanchetii* were used to analyze the presence of phytochemicals and evaluation of in vitro antioxidant property. Quantitative determination of total flavonoids content and total phenolic content was evaluated using spectrophotometric equivalents of the standards, quercetin and gallic acid respectively. The antioxidant activities of the plant extracts were determined using DPPH, ferric reducing antioxidant power, total antioxidantcapacity. From this study, it is inferred that methanolic extracts of *Antigonon leptopus* showed rich source in secondary metabolites and antioxidant potency when compared to *Artabotrys hexapetalus, Allamanda blanchetii.* Therefore, this plant may serve as a source of natural products and be utilized to treat oxidative stress mediated diseases.

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OR43 | SALIVARY BIOMARKERS FOR DIAGNOSING RENAL FUNCTIONS : A CORRELATIVE STUDY

Saritha Harish[1], Manjula Shantaram[2]
[1]Research Scholar, [2]Professor, Department of Studies in Biochemistry, Mangalore University, Jnana Kaveri, PG Centre, Chikka Aluvara, Kodagu, Karnataka, India-571232
sarihari25@yahoo.in

Diabetes causes various complications to our organ system mainly the eyes, kidneys and heart. Plasma creatinine and urea are commonly used markers of kidney function in both acute and chronic renal failure. Saliva has the potential to be a non-invasive alternative diagnostic fluid hence Urea and creatinine level in the saliva of type 2 diabetics with and without kidney problems is compared and correlated with blood samples. We found high positive correlation between saliva and serum of Urea, and Creatinine level and it is statistically significant in type 2 diabetic patients with and without nephropathy.

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PP44 | FABRICATION OF ELECTROCHEMICAL SENSOR BASED ON CARBON NANOTUBE PASTE WITH ANIONIC SURFACTANT FOR THE DETERMINATION OF TYROSINE: A CYCLIC VOLTAMMETRIC STUDY

N. Hareesha, J. G. Manjunatha*, C. Raril, Girish Tigari
*Department of Chemistry, FMKMC College, Madikeri, Mangalore University Constituent, College Karnataka, India.
manju1853@gmail.com

sensitivity and selectivity for TY in the existence of SDS/CNTPE as compared with bare carbon nanotube paste electrode (BCNTPE). This study was carried out in phosphate buffer of pH 7.0. The relationship between the oxidation peak current of TY and concentration of TY was obtained linearly in the range of 2.0×10^{-6} to 5×10^{-5}. The detection limit of TY was 7.29×10^{-7} M by CV method. The effect of pH, scan rate, repeatability, reproducibility and stability of tyrosine was studied. The Investigated voltammetric study was also applied to the examination of TY concentration in tablets as a real sample.

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PP45 | SIMULTANEOUS DETERMINATION OF DOPAMINE, URIC ACID AND ASCORBIC ACID AT POLYADENINE MODIFIED CARBON NANOTUBE PASTE ELECTRODE: A CYCLIC VOLTAMMETRIC STUDY

N. S. Prinith, J. G. Manjunatha* and C. Raril
Department of Chemistry, FMKMC College, Madikeri, Mangalore University Constituent College Karnataka, India

This paper describes the sensitive and selective analysis of dopamine (DA), Uric acid (UA) and Ascorbic acid (AA) at Polyadenine film modified carbon nanotube paste electrode (PAEMCNTPE) by cyclic voltammetric technique. The polyadenine modified carbon nanotube paste electrode was exhibited with excellent electrocatalytic activity towards oxidation of DA, UA and AA in presence of 0.2 M PBS pH 6.5 as supporting electrolyte. The surface of biosensor displayed with a permselective layer with transducing, anti- interfering and anti-fouling properties followed by solving the overlapped peaks of DA, AA and UA obtained from conventional electrode by presenting with distinct three anodic peaks. The Surface morphology of bare carbon nanotubes paste electrode (BCNTPE) and PAEMCNTPE were characterized by using Field Emission Scanning Electron Microscopy (FESEM). The detection limit for DA was 6.7×10^{-7} M. The result of this electrochemical sensor presented with good sensitivity, selectivity, reproducibility, repeatability and highly stable. Further this biosensor was carried out for the analysis of DA in real sample.

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PP46 | EXPLORING THIAZOLIDINONE DERIVATIVE FOR ANTI-BREAST CANCER ACTIVITY USING STRUCTURE BASED DRUG DESIGNING

Nadine Uwabagira
Research Scholar, Department of Biochemistry, Mangalore University Karnataka, India

Human longevity is gradually decreasing due to many factors. Nowadays many diseases are increasing and reducing our immunity as well. Among those diseases, cancer is the most problematic since it is killing many people. The origin of the breast cancer is the malignant tumour from the abnormal growth of breast cells and it is affecting mostly young women. Up to date, medicinal progress has been facilitated by synthetic drugs from heterocyclic compounds. Thiazolidinone derivatives have been studied deeply and appreciated for their potency in various biological activities. Some are potent anti-oxidant as well as antitumor, anti-breast cancer and so on. Keeping in view of the above observations, the design and synthesis of thiazolidinone was undertaken. The structure of the newly synthesized compound was determined on the basis of its IR, ^{1}H-NMR, ^{13}C NMR, Mass spectral and Analytical data. Molecular docking studies were undertaken to evaluate its binding interactions and inhibitory properties with cyclin dependent kinase 2 (CDK 2), (PDB: 3QQK). One compound bearing 4-Cl on phenyl ring and 2-CH_3-4-Br on the other ring exhibited effective binding and docking with minimum energies of -9.785 compared with that of [4-amino-2-(prop-2-en-1-ylamino)-1,3-thiazol-5-yl](phenyl)methanone] used as standard inhibitor. Hence it may be regarded as potent anticancer agent.

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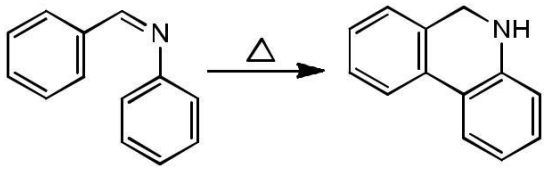
PP47 | SYNTHESIS OF PHENANTHRIDINE DERIVATIVES VIA ELECTROCYCLIZATION OF IMINES UNDER SOLVOTHERMAL CONDITION

Nagma Banu[1], Balakrishna Kalluraya[2] and K. M. Lokanatha Rai[1]
[1]Department of chemistry, Jnana kaveri P.G. centre, Mangalore University, Chikka aluvara, Kodagu.
[2]Department of chemistry, Mangalore University, Mangalagangothri.

Phenanthridines and their derivatives are an important class of heterocyclic nitrogen-based compounds that form a wide range of biologically important molecules that have found important applications in antimicrobial, antifungal and other allied activities. Due to their potential applications in medicinal chemistry, researchers have been interested to develop efficient and versatile methods for the synthesis of these compounds. In this contrast we are synthesizing various dihydrophenanthridinederivatives via electrocyclizationof imines derived from benzaldehyde and aniline under solvothermal condition. Structure of the molecules were confirmed by spectral analysis like IR, NMR and mass.



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PP48 | GC-MS AND*IN SILICO* MOLECULAR DOCKING STUDIES ON THE PHYTOCONSTITUENTS OF *AMOMUM NILGIRICUM* (THOMAS) FOR ITS POTENTBIOLOGICAL ACTIVITIES

Narasimha Murthy K[a], Soumya K[b], Niranjana S.R.[a]
[a]Department of Studies in Biotechnology, University of Mysore, Manasagangotri, Mysore-570 006 Karnataka, India
[b]Department of Microbiology, Field Marshal K. M. Cariappa College, A Constituent College of Mangalore University, Madikeri – 571201, Karnataka, India

Amomum nilgiricum (Thomas) is one of the plants reported from Western Ghats of India, belonging to the family *Zingiberaceae*.Family *Zingiberaceae* is a small group of plants with Ethno-botanical values and well-known for its ethno medicinal applications with play a major role in Indian System of Medicine, Ayurveda. In the present investigation, different solvent extracts of *A. nilgiricum*were subjected to Perkin-Elmer Gas Chromatography-Mass Spectrometry (GC- MS) analyses to characterize and study the important phytochemical constituents. The GC-MS analysis of leaf and rhizome solvent extracts confirmed the presence of 25 phytochemical compounds. GC/MS analysis revealed the presence of 09 and 06 phytochemicals from methanol and ethyl acetate leaf extracts respectively and 10 phytochemicals were identified in methanolic rhizomes extract of*A. nilgiricum*. The major phytochemical compounds identified are Pentanoic acid 2-(aminooxy), 1,6:3,4-Dianhydro-2-deoxy-beta-d-ribo-hexopyranose, 2,4,6- Cycloheptatrien-1-one, 4-methyl-2,4-bis(4'-trimethylsilyloxyphenyl) pentene-1, Hexestrol di-TMS, Silane, 1,4-phenylenebis [trimethyl, 1,1,1,3,5,5,5-Heptamethyltrisiloxane, 1-Octadecyne, 3,4-Heptadien-2-One, 3-Cyclopentyl-6-methyl,

Serverogenin acetate, 3,4-Heptadien-2-one, 3-cyclopentyl-6-methyl, Trimethyl [4-(1,1,3,3,-tetramethylbutyl) phenoxy] silane, 1, 2-Bis (trimethylsilyl)benzene, 2,4,6-Cycloheptatrien-1-one, 3,5-Bis-trimethylsilyl, Propanoic acid, 2-oxo-, ethyl ester, Propanedioic acid, 2-Amino-octadec-7-ene-1,3-diol butaneboronate, 1,3-Dioxane, 2,4-dimethyl, Pyrimidine-2,4 (1H,3H)-dione, 5-amino-6-nitroso, 2,3-Anhydro-d-galactosan, 3,4-

Anhydro-d-galactosan, 2,3-Anhydro-d-mannosan, 3-Hexyn-2-ol, 5-methyl and Tetracosanoic acid, trimethylsilyl ester. This is the first report on the phytochemical composition of leaves and rhizomes of *A. nilgiricum* which mayhave some pharmacological significance. There is no literature available on GC-MS and phytochemical studies of this plant. This study result will make a way for the production of herbal medicines for various ailments by using *A. nilgiricum* plant. Twentyfive phytochemicals from *A. nilgiricum* were converted into 3 D structures and docked with bacterial, fungal, viral, and diabetic proteins. Among these 25 compounds, serverogenin acetate showed antibacterial, antifungal, antiviral, antioxidant and antidiabetic properties *in silico*. This study will be helpful in developing anovel drug from phytochemicals of *A. nilgiricum* to treat different diseases.

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PP49 | CARBON NANOTUBE PASTE ELECTRODE FOR SENSITIVE DETERMINATION OF INDIGO CARMINE

P. A. Pushpanjali, J.G. Manjunatha*, C. Raril
*Dept of Chemistry, FMKMC College, Madikeri, Mangalore University Constituent College Karnataka, India
manju1853@gmail.com

An electrocatalytic method was developed for the sensitive determination of Indigo carmine (IC) using poly (Adenine) modified carbon nano tube paste electrode (PAMCNTPE). This modified electrode exhibited the excellent current sensitivity towards the redox reaction of IC compared to bare carbon nano tube paste electrode (BCNTPE). Cyclic voltammetry (CV) study revealed that this PAMCNTPE have quasi reversible redox behavior in electrolyte solution. The influence of scan rate, concentration, and pH on the electrode has been investigated and also electron transition kinetics on the electrode has been evaluated. The surface morphology of the electrodes was characterized using field emission scanning electron microscopy (FESEM). The individual determination of IC was performed using CV. The electrocatalytic behavior of IC at BCNTPE and PAMCNTPE in differential pulse voltammetry (DPV) was examined. The calibration curve for IC showed a linear response in the range of 8×10^{-6} to 1.3×10^{-4} M in 0.2 M Phosphate buffer solution (PBS) at pH 8.0 with detection limit (LOD) 2.7×10^{-7} M and limit of quantification (LOQ) 9.3×10^{-7} M. The modified electrode exhibited high sensitivity, stability and was successfully applied for the determination of IC in the real sample.

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PP50 | A N-GLYCAN SPECIFIC LECTIN FROM *RHIZOCTONIA BATATICOLA,* A PHYTOPATHOGENIC FUNGUS HAS ANTICANCER EFFECT AGAINST HUMAN COLON CANCER

Prajna Hegde, Bale M Swamy and Shashikala R Inamdar*
Department of Biochemistry, Karnatak University Dharwad, India-580003
srinamdar2009@gmail.com

Lectins are the carbohydrate binding proteins of non-immune origin that are ubiquitous in their occurrence and have several clinical applications. *Rhizoctonia bataticola* is a plant pathogenic fungus, known for the presence of high mannose N-glycan specific mitogenic lectin *Rhizoctonia bataticola* [RBL] as reported earlier, RBL recognizes N glycans expressed on cancer cells including CRC.

Colorectal cancer [CRC] is 3rd most common cancer in men and 2 nd most common cancer in women worldwide. Altered glycosylation, particularly an increased β1, 6-branching with an increase in [truncated] high-mannose type glycans and also higher abundance of [poly-] N-acetyllactosamine

extensions of N-glycans is reported in CRC. The development and progression of CRC is regulated by altered N-glycosylation, hence it has been explored in search for new biomarkers for early diagnosis and as specific targets in cancer therapy. RBL has shown growth inhibitory and apoptotic effect on human ovarian and leukemic cells, but mitogenic effect on normal PBMCs revealing its clinical potential. Here we report the effect of RBL on human colon epithelial metastatic cancer SW620 cell growth and metastasis. Flow cytometric analysis showed RBL has strong binding to metastatic colon cancer SW620 cells with MFI of 192. MTT assay revealed growth inhibitory effect of RBL on SW620 cells with IC_{50} of 6.8 µg/ml. RBL showed increased release of ROS and nuclear degradation in SW620 cells compared to untreated control. Clonogenic assay revealed inhibition of reproductivity by RBL. Cell cycle and apoptosis analysis by flow cytometry revealed the induction of apoptosis by RBL. Wound healing, invasion and migration assay demonstrated anti-metastatic effect of RBL. CAM assay revealed anti angiogenic effect of RBL. All these results show the promising clinical potential of RBL as possible anticancer agent against human colon cancer.

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PP51 | ISOLATION AND CHARACTERISATION OF THE HALOPHILIC AND HALOTOLERANT BACTERIA ASSOCIATED WITH THE MARINE SEAWEEDS

Nithin Muliya Sankappa[1], Puneeth Thaduru Goolappa[1], Kushala, Kallihosure Boregowda[1], Ajay S Khandagale[2], Suresh Thangavel[1] and Girisha Shivani Kallappa[1]
[1]Department of Fisheries Microbiology, [2]Department of Biochemistry, College of Fisheries Mangalore- 575 002, India.
puneethgowda615@gmail.com

Marine ecosystem, covering over 70% of the Earth's area, is the place for a wide variety of plants and animal species. Amongst them, seaweeds are one of the large and diverse ecosystems, it plays an essential role in marine environment. It is mainly involved in global primary production and providing food and shelter for variety of organisms. Seaweeds surface supplies protected and nutrient rich conditions for the bacterial growth. Seaweed have a rich diversity of associated microorganisms compare with the other multicellular organisms. These microorganisms maybe beneficial or harmful to the seaweeds. Epiphytic bacterial communities have been reported as vital for morphological development of seaweeds, and bacteria with antibacterial properties are thought to protect the seaweeds from pathogens and the other competition organisms. Some halophilic and halotolerant bacterial species show host specificity and bactericidal activity against specific pathogens. This specificity engages complex biochemical interactions between seaweed and bacteria. Marine bacteria have given the impact to the entire world as a source of bioactive metabolites producers which are used in the treatment of many severe diseases that show a range of biological activities including antibacterial, antifungal, anticancer, antitumor, cytotoxic, cytostatic, anti-inflammatory, anti-parasitic, antiviral, antioxidant and anti-angiogenesis, etc. The present study is focused on isolation and characterization of bacteria associated with marine seaweeds along with identification of secondary metabolites and its property. From the total of 17 marine seaweeds samples analysed, a total of 38 isolates which are halophilic and halotolerant was isolated and grown in a salt concentration of 150 ppt and 200ppt at room temperature. The bacteria where grown and the secondary metabolites of these bacteria where checked for their antioxidant and antibacterial property. These secondary metabolites are further checked for the anticancer property by using cell line based study. These secondary metabolites have the potential use to treat severe diseases in humans.

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PP52 | GREEN SYNTHESIS OF SILVER NANOPARTICLES USING *MORINGAOLEIFERA* EXTRACT

Pushpalatha B. N.*., Kantharaju S**, K.R. Siddalinga Murthy***
*Research Scholar, *** Professor, Department of Biochemistry, Jnanabharathi Campus, Bangalore University, Bangalore-560 056
** Assistant Professor, KLE's S. Nijalingappa College, Rajajinagar, Bangalore – 560 010 pushpalathabnp@gmail.com

In recent science, Nanotechnology is a burning field for the researchers. Nanotechnology deals with the nanoparticles having a size of 1-100 nm in one dimension and they are used significantly in the medical chemistry, atomic physics and etc. Silver is known for its antimicrobial effects and silver nanoparticles are gaining their importance due to their antimicrobial activities. In this study, rapid and simple approach was applied for the synthesis of silver nanoparticles using aqueous *Moringa oleifera* leaf and seed extract. The formation of silver nanoparticles was observed as a colour change of the mixture. Various techniques used to characterize synthesized nanoparticles are SEM and UV–Visible spectrophotometer and XRD.The formation and stability of the reduced silver nanoparticles in the colloidal solution were monitored by UV–vis spectrophotometer analysis. The mean particle diameter of silver nanoparticles was calculated from the XRD pattern according to the line width of the plane, refraction peak using the Scherrer's equation. The plant extract showed the higher antioxidant activity and toxicity evaluation was also carried out. The silver nanoparticles showed antibacterial activities. Results confirmed this protocol as simple, rapid, one step, eco-friendly, non-toxic and an alternative to conventional physical/chemical methods.

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PP53 | A COMPARATIVE STUDY OF GLYCEMIC INDEX OF KARUNKURUVAI AND PONNI RICE VARIETIES OVER DIABETES (LIFE STYLE DISEASE)

S.Meera[1*], L.Priya[1] and Hemamalini.v[*]
Student[1*], Research scholar[1]and assistant professor[*]
Department of plant biology and plant biotechnology
Quaid-e-millath Government College for women
Chennai – 600002, Tamil nadu, India
hemaraju97@yahoo.com

Rice is a staple food, which is consumed in many countries such as India, China, Singapore, Malaysia etc.., It is also believed that consumption of rice increases blood glucose level, which causes serial impacts such as Diabetes, Obesity, Coronary Artery Disease (CAD), Renal failure etc.., This is due to the high glycemic index of the modern rice varieties which are consumed by large group of people. The Glycemic index (GI) method is used to classify the dietary carbohydrates of Karunkuruvai and Ponni rice varieties over blood glucose levels. Healthy volunteers were recruited and after an overnight fast were given a 50g available carbohydrate portion of glucose (reference food) or different varieties of cooked rice (test food) on separate occasions. The fasting as well as postprandial capillary blood glucose response was determined over 2 hrs, and the incremental area under the curve (IUAC) was calculated. The GI was calculated from the formula IUAC of test food\ IUAC of reference food × 100. The GI value of karunkuruvai rice varieties exhibits very low glucose level and high fiber content. The absorption rate is comparatively low which helps in proper digestion and formation of healthy blood. Inclusion of karunkuruvai in daily day to day life shows more improvement in diabetic health.

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PP54 | SILVER NANOPARTICLES AS A MATRIX FOR ENZYME IMMOBILIZATION

Sachin H R[1], Prabhudev S H[1] , Ganesh Prasad D N[2] & A.H.Sneha Rani
Department of Studies in Biochemistry, Jnana Kaveri, Mangalore University, P G Centre, Chikka Aluvara-571232

Immobilization of enzyme on silver nanoparticles (AgNPs) is one way to improve the stability, activity and reusability of enzymes. In this study, the potential of silver nanoparticles for immobilization of enzymes in one pot approach was explored. Trypsin was immobilized on AgNPs synthesized by green synthesis method by a single step process. Approximately, 74 % of trypsin was bound on to the AgNPs without the use of any cross-linking agent. 50 % AgNPs bound maximum amount of trypsin and showed 60 % of activity compared with control (only trypsin) and other concentration of AgNPs (10-40 %).The process of enzyme immobilization was carried out upto 20 hours at 4 $^{\circ}$C and at intermittent time intervals the sample was checked for bound enzyme; at 10 & 18 hours of incubation period, bound enzyme showed 66 & 75 % of activity, respectively. Different concentration of trypsin (100-500µg) was checked for maximum binding on 50 % concentration of AgNPs and the results showed maximum activity with lowest concentration of trypsin. The reusability of immobilized enzyme was studied; enzyme showed 75 % activity for 2nd use and 50 % activity during 4th use of same immobilized enzyme and at 5 th and 6th round it showed 25 & 12 % activity. The immobilized enzyme showed temperature optima at 37^{o}C. The study shows an easy and fast approach of enzyme immobilization.

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PP55 | ANTI BACTERIAL ACTIVITY OF *PIPER LONGUM* L

Shakunthala Bappaliga
Research Scholar, Mangalore University

The plant *Piper longum* L. in the family piperaceae, is also known as _long pepper‘. It is an aromatic climber with perennial woody roots occurring in the hotter parts of India, from Central Himialayas to Assam and evergreen forests of Western Ghats. The dried fruits (pipli), root and stem (Piplamul) of Piper longum, is attributed with numerous medicinal properties. Phytochemical studies have shown that long peper constituents are known for their antimicrobial action. In the present study, antibacterial activity of alkaloids such as piperine and piper longumine, extracted from Pipli and piplamul has been evaluated against *Bacillus subtilis, Staphylococcus aureus, Pseudomonas aerugenosa, Escherichia coli, Proteus vulgaris and Salmonella typhi.* The basis of microbiological assay attempted in this study is Agar well diffusion method in which the effect of two different compounds on the growth of microorganisms in a nutrient medium is compared. One of these two substances is a standard, whose potency is well known and other is the sample whose potency is to be investigated. It is found that all the bacteria are sensitive to piperine and piperlongumine.

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PP56 | STUDY OF OSTEOBLASTIC AND OSTEOCLASTIC MARKERS OF BONE IN MENOPAUSAL WOMEN

Pawar SD1, Badade ZG1, Katkam RV2, Narshetty Jayashree3, Narshetty GS4 1Biochemistry Dept, 3Obsteric and Gynaec Dept, 4General Surgery Dept, MGM Medical College Navi Mumbai and 2Biochem Dept, Dr VM GMC, Solapur

Bone is a dynamic and basic connective tissue forming delicate skeleton of body.It is metabolically active tissue and has osteoblast and osteoclast composed of inorganic minerals and organic matrix.In menopausal women rapid loss of bone begins.Material:

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This study intends to find relation between osteoblastic and osteoclastic parameters in menopause.Methods: Present study involve 45 healthy and 45menopausal women.Blood samples were collected under aseptic precaution from both the groups. Serum ALP, Calcium, Phosphorous, tartarate resistant acid phosphatase (TRACP) were estimated in both groups. Result: In menopausal women loss of ovarian function associated with increase in rates of resorption. Serum ALP activity significantly decreased in menopausal women on comparison with healthy controls.The activity of TRACP is significantly increased ($p<0.001$).Serum Calcium, Phosphorous and magnesium was significantly increased in menopausal women ($p<0.001$) Conclusion: There are significantly elevated osteoblastic and osteoclastic markers in menopausal women, indicates high bone turnover due to estrogen deficiency alone.Our cumulative findings implicate turnover and loss in menopause women.

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PP57 | GENOME SEQUENCE OF *SALMONELLA TYPHIMURIM* ST313 FROM A PATIENT WITH ACUTE GASTROENTERITIS, REPORTED FOR THE FIRST TIME FROM INDIAN SUBCONTINENT

Sohan Rodney Bangera[a], Shashikiran Umakanth[b], Asish K. Mukhopadhyay[c], Pimlapas Leekitcharoenphon[d], Rene S. Hendriksen[d], Mamatha Ballal[a].

[a]Enteric Diseases Division, Department of Microbiology, Kasturba Medical College, Manipal

[b]Department of Medicine, Dr. TMA Pai Hospital, Manipal Academy of Higher Education, Udupi

[c]Division of Bacteriology, National Institute of Cholera and Enteric Diseases, Kolkata

[d] Research Group for Genomic Epidemiology, National Food Institute, Technical University of Denmark, Denmark

Introduction: Non-typhoidal Salmonella (NTS) serovars usually have a broad host-range and the infected human cases are food borne transmitted from food animal reservoirs. Among the NTS serovars, Salmonella typhimurium is found to be the commonest and frequent serovar in India. The ST19 is the commonest sequence type (ST) of Salmonella typhimurium commonly found throughout the world. Salmonella typhimurium ST313 is most commonly associated with invasive non-typhoidal Salmonella (iNTS) disease in Africa among patients with advanced HIV infection and malignancy. Here we report a genome sequence of *Salmonella typhimurium* ST313 isolated from a elderly patient with Non-Hodgkins Lymphoma associated with acute gastroenteritis. Methods: Stool specimen from the patient was cultured following standard protocol. Antibiotic susceptibility testing was done by the standard Kirby Bauer disk diffusion method. The strain was subjected to MALDI- TOF and serotyped at NICED, Kolkata. DNA extracted was subjected to PCR for the detection of virulence and AMR genes. The extracted DNA was consigned to the Technical University of Denmark for whole genome sequencing (WGS) and further analysis. Results: Microbiological culture analysis and serovar typing revealed that the etiology was *Salmonella typhimurium*. It was found to be sensitive to all the antimicrobials ampicillin, ceftriaxone, ciprofloxacin, chloramphenicol and trimethoprim/Sulfamethoxazole. WGS results proved it was ST313 and was positive for virulence genes like *invA, spvC, sopB* and *stn* gene whereas negative for AMR genes. The phylogenetic tree analysis concluded that the most closely related sequence to the Indian ST313 was the UK ST313 rather than the African ST313. Conclusion: Discovery of a single strain of ST313 reveals a previously unknown diversity in this sequence type. This study in a developing country like ours highlights the importance of WGS to be introduced throughout which enables to understand the epidemiology and microbiology of infectious diseases and also to identify the point of source origination.

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PP58 | Synthesis, characterization of pyridine containing Schiff base derivatives and their Pharmacological activity

Soukhyarani Gopal Nayak, Boja Poojary*
Department of Post-Graduate Studies and Research in Chemistry, Mangalore University
Mangalagangothri-574199, Karnataka, India.
bojapoojary@gmail.com

Pyridine and its derivatives are the important chemical compounds with tremendous applications in the various fields like agro industries pharmaceuticals as a reagent and solvents. Pyridine is main precursor in many drug synthesis such as sulfapyridine, mepyramine. Many products which contain pyridine sub units exhibits biological activity such as antimicrobial, anti tuberculosis, anti cancer, anti inflammatory, anti tumour, anti oxidant. Schiff base which contain an azo methane group attract much interest in synthetic chemistry. Schiff base with donors (N, O, S) have structural similarities with natural biological systems and imports in elucidating the mechanism of transformations and reseminations reactions in biological systems due to the presence of imine (-N=CH-) group. Schiff base are also used as substrate in the preparations of number of industrial and biologically active compounds via closure, cycloaddition and replacement reactions. These observations lead that pyridine containing Schiff bases are expected to have enhanced biological activities. It was well established that the biological activity associated with the hydrazone compounds attributed to the presence of the active pharmocophore (-CO-NH-N=C- bond). These all observations promoted us to synthesise some Schiff bases clubbed with pyridine scaffolds. The synthesized compounds were characterized by FTIR, LC-MS, HNMR, 13 CNMR single XRD. The synthesised compounds were screened for anti bacterial, anti fungal, anti inflammatory activity and result of such studies will be presented.

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PP59 | ANTIDEPRESSANT EFFECTS OF QUERCETIN AND ITS IMPACT ON BDNF AND IL-6 LEVELS IN MSG (MONOSODIUM GLUTAMATE) INDUCED DEPRESSED MALE MICE

Sriram B.S.[1*], Dr.Ravichandra V.[1], Dr.Jayanthi M.K.[2], Dr. Dinesh S.M. [3 1*]
Research Scholar, [1] Associate Professor, Department of Pharmacology, KSHEMA, Mangaluru
[2]Professor and HOD, Department of Pharmacology, JSS Medical College Mysore [3]Department of Biomedical Science, Nitte University Centre for Science Education and Research Paneer Campus, Deralakatte, Mangaluru
ravi75chandra@yahoo.co.in

Aim- To evaluate antidepressant activity of quercetin in monosodiumglutamate (MSG) induced depression in male mice. MATERIALS AND METHODS: Male swiss mice, 3 months old was randomly assigned to six groups of six rats. MSG was administered at 500 mg/kg intraperitoneally for 21 days and interventions was started on 6th day till 21stday of MSG administration.Imipramine and quercetin was dissolved in normal saline and administered i.p at a dose of 15 mg/kg and 100 mg/kg.On 22nd day mice are sacrificed and hippocampus and amygdala are taken out and subjected for analysis using ELISA.Results And Analysis: BDNF levels was found to be significantly decreased in MSG group. There was no significant increase in BDNF levels in quercetin and imipramine alone treated groups. Quercetin as compared to standard imipramine has raised BDNF levels in MSG induced depressed mice groups. IL-6 levels was found to be elevated in MSG group. There was no significant increase in quercetin and imipramine groups. Quercetin and imipramine decreased IL-6 levels in MSG induced depressed mice groups.Conclusion: Quercetin exhibits antidepressant effects compared to standard by increasing BDNF and decreasing IL-6 levels.

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PP60 | INOCIN A-OXOESTER (COBZ) AS A PROTECTING GROUP FOR CARBOHYDRATES.

Suhail Ahmad Rather, † Atul Kumar, † and Qazi Naveed Ahmed †*
†Medicinal Chemistry Division, Indian Institute of Integrative Medicine (IIIM), Jammu, India.
atulrana8490@gmail.com

Oligosaccharides, which are essential to all cellular organisms, play vital roles in cell recognition, signaling, and are involved in a broad range of biological processes.[1]The chemical synthesis of carbohydrates represents a powerful tool to provide homogeneous glycans. In carbohydrate synthesis, the major concern is the orthogonal protection of hydroxyl groups that can be unmasked independently.[2] Classical protecting groups include benzyl ethers (Bn), which are normally cleaved through hydrogenolysis or by means of metal reduction, and acetate (Ac), benzoate (Bz) or pivaloate esters, which are removed using base promoted hydrolysis.[3] In present work a series of α-Oxoester (COBz) protected saccharides, with divergent base sensitivity profiles against benzoyl (Bz) and acetyl (Ac), were designed and $KHSO_5/CH_3COCl$ in methanol was identified as an easy, mild, selective and efficient deprotecting reagent for their removal in the perspective of carbohydrate synthesis.Timely monitoring of later reagent was advantageous in establishing both sequential as well as simultaneous deprotecting of COBz, Bz and Ac. The salient feature of our work is its ease to generate different acceptors using designed monosaccharides. In summary, we demonstrated α-Oxoester (COBz) as a new protecting group for carbohydrates and the application of this group for the synthesis of Glycosylphosphatidylinositol (GPI) anchor are in progress

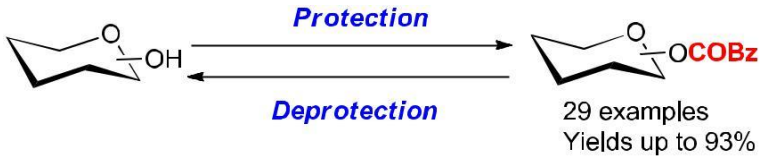

Figure 1: Summary of our work

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PP61 | GENOME ANALYSIS OF *COMAMONAS TESTOSTERONI* TO DETERMINE ITS ROLE AS A DIARRRHEAL PATHOGEN

Sujith Pavan[1], Mamatha Ballal[2], Sohan R. Bangera[3], Vignesh Shetty[4], Shashikiran Umakanth[5], Lina Cavaco[6], Pimlapas Leekitcharoenphon[7], Frank M. Aarestrup[8], Rene S. Hendriksen[9]
[1,3] Ph.D. Research Scholar, [2] Ph.D., FIMSA, Professor of Microbiology, [4]Post doctoral Fellow
[5]MD, Professor of Medicine, Manipal Academy of Higher Education and Unit Head of Medicine, Dr. TMA Pai Hospital, Udupi, India.
[6] Researcher, Staten Serum Institute, Denmark.
[7] Researcher, [8] Professor & Head, [9]Professor, Technical University of Denmark, Denmark.

Comamonas testosteroni is a ubiquitous, aerobic, motile Gram-negative bacteria habitually considered to be environmental microorganism, but it has shown to play a significant role as potential pathogen causing certain clinical infections. Here we report the genome analysis of five diarrheal isolates of *Comamonas testosteroni, and also instigate to consider Comamona testosteroni* as potential pathogen which could posess virulence factor. Methods: Stool samples were processed by following standard protocol. Diarrheal Isolates were identified, and antimicrobial susceptibility done with MIC determined by Vitek 2 Compact system.Extracted bacterial DNA was subjected to whole genome sequencing and further analyzed.Library

preparations and DNA sequencing were performed at the Welcome Trust Center for Human Genetics (Roosevelt Drive, Oxford OX37BN, 173 United Kingdom).The pathogenesis of the strains were assessed by using the PathogenFinder version 1.1 available from Center for Genomic Epidemiology (CGE) A phylogenetic Single Nucleotide Polymorphisms (SNPs) analysis was conducted using the CGE pipeline; CSI phylogeny. The concatenated sequences were subjected to parsimony tree construction using PhyML.ResultsFive strains of *Comamonas testosteroni* were isolated from diarrheal samples. In our study thestrains were found to be resistant to fluoroquinolones. The bioinformatic analysis revealed twoamong the five *C. testostereoni* as human pathogens. The CGE VirulenceFinder 1.5 tool detected the virulence factor celb- Endonuclease colicin E2 in one of the *C. Testostereoni* isolate. The phylogenetic analysis suggests that *two* strains of *C. testosteroni are* most closely related and *three* strains belonged to the same branch and the other *two* strains belonged to the sane clade.Conclusion: *Comamonas* spp. can adapt very well both ecologically and physiologically. Here, we alert clinicians about the potential diagnosis of diarrhea in immunocompromised patients caused by *C. testosteroni*, an uncommon pathogen which should not be neglected.

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PP62 | MOLECULAR CLONING OF ANTIMICROBIAL PEPTIDE FROM *TRICHOGRAMMA CHILONIS ISHII*

Sunil S. V.[1], Ondara Zablon Kerima, [1] P. Niranjana*[1] and P. Sharanappa[2]

[1]Department of Post-Graduate Studies and Research in Biochemistry, Kuvempu University Shankaraghatta- 577 451, Karnataka, India.

[2]Department of Post-Graduate Studies and Research in Bioscience, P.G. Centre, Hema Gangothry Mysore University, Hassan - 573201

Agricultural productivity in India is affected majorly by insect pest resulting in losses up to 10- 30%. Indiscriminate use of pesticides results in development of resistance in many lepidopteron pests. Increasing awareness about the hazards of pesticides used in agriculture and its impact on health results in use of bio control agents against agricultural pests given a more attraction and warranted. *Trichogramma chilonis Ishii* is an egg endoparasitoid commonly used bio control agent for controlling Lepidopteron agricultural pest. It lays egg into the host egg and arrests the growth and development of host egg and during its development larva feeds on host egg content and turns into a pupa, and to adults, then it emerges out by puncturing of the egg. Till today there is report on molecular mechanism associated with developmental arrest of the host egg. To know its transcriptome, RNA-Seq of the adult *T. chilonis* was carried out, total 18,372,639 high-quality reads were generated using Illumina pair-ended sequencing, De novo assembly results 24,488 transcripts, and 14,643 exhibited putative homology with class insect proteins from UniPROT database. In the present study, transcriptomic based identification of antimicrobial peptide transcripts was identified. *T. chilonis* were mass reared on *Corcyra cephalonica* eggs, adults were used for isolation of total RNA and converted to cDNA. Gene specific primers were used to amplify AMPs and ligated into TA cloning vectors, transformed into DH5α cells. Positive clones were confirmed by colony PCR, gel retardation assay, and restriction digestion. The Restriction enzyme released AMP gene from the cloned vector was further confirmed by sequence analysis. *In silico*-based study revealed that it belongs to knotting like peptide rich in cysteine amino acids and resembles AMP of insects. The identified AMP will certainly be a road map for understanding its role on its development.

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PP63 | CHARACTERIZATION AND ANTIBACTERIAL ACTIVITY OF THE ENDOPHYTIC FUNGUS *TRICHODERMAVIRIDE* ISOLATED FROM *ARISTOLOCHIAINDICA L.*

Sushma K. S. And Jayashankar M.
Department of Studies and Research in Microbiology, Mangalore University, Post Graduate Centre Jnana Kaveri Campus Kodagu-571232, Karnataka, India.
ksushmitha80@gmail.com

Abstract: Endophytes are the organisms living in the intracellular tissues of the host plant without causing any symptoms. The endophytic fungi were isolated from *Aristolochia indica* which is a rare traditional medicinal plant climber belongs to family *Aristolochiaceae.* It is an endangeredplant commonly called Eshwariballifound in India, Bangladesh, Nepal, Srilanka and also in Brazil. The plant is used as a stimulant, fever, diarrhea and mainly for the snake bite. The plant sample was collected from BR Hills ranges from 11° 40‘to 12° 09‘North and 77° 05‘to 77° 01‘East, the southern part of Eastern Ghats Chamarajanagar District, Karnataka. The present investigation revealed one endophytic fungus *Trichoderma viride* grown on sabarauds dextrose media and identified by microscopic observation. Fermentation was done to obtain the broth culture and further tested for its antibacterial activity against four pathogenic bacteria, it found to be effective against *Escherichia coli, Bacillus subtilis* and *Staphylococcus aureus*resulting the zone of inhibition (30mm) rather in*Pseudomonas aerogenosa.* The ethyl acetate extract of the crude fungal culture was subjected to LC-MS analysis for the identification compound present in crude extracts. Based on the molecular weight and formed by the peaks and compared to available LC-MS database, thirteen compounds have been identified among them Eicosane, 1 Hydroxy-2 Prenylnaphthalene, Dibutylphtalateare dominant. In conclusion, Endophytic fungi can be further analyzed to the pure form that are the promising source of producing natural bioactive compound that are useful in pharmaceutical industries.

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PP64 | ANTI-BACTERIAL BLIGHT POTENTIAL OF *GNIDIA GLAUCA* (FRESEN.) GILG

Torankumar Sannabommaji and Vadlapudi Kumar*
Department of Biochemistry, Davangere University, Shivagangothri, Davangere- 577007, Karnataka
*vadlapudikumar@rediffmail.com

Present study deals with evaluation of antibacterial activity of phytochemicals isolated from leaves of *Gnidia glauca* (Fresen.) Gilg (Thymelaeaceae), a very little-known plant of the southern part of the Western Ghats. Methanol, ethyl acetate, n-butanol and ammonia were used for the preparation of test fractions by Soxhlet extraction and solvent partition methods. *Gnidia glauca* was found to be rich source of phyto-protectants like alkaloids, saponins and flavonoids. Efficacy of *G. glauca*plant has been a good-old traditional practice for controlling the bacterial blight disease of paddy and pomegranate caused by the Gram-negative bacterial pathogens *Xanthomonas Oryzae* Pv. *Oryzae* and *Xanthomonas campestries* pv. *Punicae* (Pomegranate) respectively. Presence of active antibacterial compounds observed in saponins, alkaloids and flavonoid fractions of *G. glauca* leaf extracts which showed the significant antibacterial activity. The alkaloid fraction of leaves was found to be most efficient. These fractions which proved to bepotentially effective against bacterial blight pathogens, can be used as natural alternative preventive biopesticides to control bacterial blight diseases in plants the resultsrationalize further studies in the potential discovery of new natural bioactive phytocompounds against bacterial blight pathogens of plants.

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PP65 | SYNTHESIS, CHARACTERIZATION OF THIAZOLE CONTAINING HYDRAZONE DERIVATIVES AND THEIR PHARMACOLOGICAL SCREENING

Vinuta Kamat[a], Suresh P. Nayak[a*], R Santosh[a], Delicia A. Barretto[b], Shyam K. Vootla[b], Sheela Khanapure[b]

[a]Department of Post-Graduate Studies and Research in Chemistry, Mangalore University Mangalagangothri- 574199, Karnataka, India.

[b]Department of Biotechnology and Microbiology, Karnatak University, Dharwad-580003, Karnataka

sureshpnk@yahoo.com

Thiazoles are the main building block scaffolds in drug design and their derivatives were found in many natural products like vitamin and antibiotics, and they show broad range biological activity. It has been observed that the thiazole analogues incorporated with different nuclei have shown biological profile like antibiotics, antineoplastic, antifungal, anti inflammatory, anti ulcer, anti parasitic. The recent reports have been declared the applications of thiazole core structure in drug design and development of novel therapeutic agents. Due to facile synthesis and good functionality present in the -CH=N-NH- is responsible for the pronounced activity and place a key role by acting as a binding site for the receptors. Exhibits broad range of biological activities, including antifungal, antibacterial, antimalarial, antiproliferative, anti-inflammatory, anti oxidant, antiviral, and antipyretic properties. These observations promoted us to club both thiazoles and Schiff bases. The present study deals with thiazole linked Schiff base and their derivatives. The synthesized compounds were characterized by spectral analysis. The selected compounds were studied for interaction with calf thymus-DNA by UV absorption spectral method. On binding to DNA, the absorption spectrum underwent bathochromic and hypochromic shifts. The synthesized compounds have been screened for antibacterial antifungal and anti-inflammatory activity.

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PP66 | STUDY OF ALKALINE PHOSPHATASE AND HAEMOGLOBIN LEVELS IN PRETERM DELIVERY

Ankita Kondhalkar[1], Kavita More[2], Sushil Kumar[3]

PG student[1], Associate Professor,[2] Department of Bichemistry, MGM Medical College, Kamothe Navi Mumbai, Prof and Head,[3] Department of OBGY, MGM Medical College, Kamothe Navi Mumbai

kavitatmore@gmail.com

Introduction: Preterm birth (PTB) is a major determinant of neonatal mortality and morbidity. Preterm babies are prone to serious illness or death during the neonatal period. PTB is one of the unresolved problems in clinical obstetrics and one of the greatest threats to the developing fetus, there is need to determine predictive biomarker for preterm delivery. Therefore, present study aimed to assess serum levels of alkaline phosphatase and haemoglobin in preterm and full-term delivery. Materials & Methods: The present study includes total 60 subjects that comprise thirty women presenting with preterm onset of labor followed by delivery and thirty women who delivered at term served as controls. Blood Samples from the patients were obtained for alkaline phosphatase and haemoglobin estimation, when patient was in labor. Serum alkaline phosphatase activity was estimated by Kinetic p-NPP method. Haemoglobin levels were measured by automated haematology analyser. Results: We found significantly high levels of alkaline phosphatase ($P \leq 0.05$) in preterm delivery as compared to full term delivery. Hemoglobin levels are significantly decreased in preterm delivery ($P \leq 0.05$) as compared to full term delivery. Conclusion: Our study showed that low levels of Hemoglobin and elevated alkaline phosphatase levels may be associated with preterm delivery in asymptomatic pregnant women. These biochemical parameters could be used as predictive biomarkers for preterm delivery.

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PP67 | STUDY ON NUTRITIONAL, FUNCTIONAL PROPERTIES AND PHYTOCHEMICAL ANALYSIS OF LEAVES OF *COLOCASIA ESCULENTA* L. AND *CASSIA TORA* L.

Bhagyalaxmi, Liekitha and Laveena K.B.
Department of Biosciences, Mangalore University, Mangalagangothri, Dakshina Kannada District Karnataka-574 199, India.
laveenavenkatesh@gmail.com

Plants are valuable sources of a vast array of chemical compounds which are synthesized and accumulated in various parts of plant body. The uses of traditional medicinal plants for primary health care have steadily increased worldwide in recent years. The present investigation like organoleptic or morphological characters, microscopic or anatomical studies, physicochemical, phytochemical evaluations and fluorescence analysis of powdered crude drug were carried out, to determine the pharmacognostical properties of *Colocasia esculenta* L. and *Cassia tora* L. Organoleptic analysis showed typical tongue sensitizing aromatic taste and characteristic odour. Microscopic studies were done to see special features. Physicochemical evaluations (loss on drying, ash values, extractive value) showed the presence of physiological ash and non-physiological ash which is derived from the plant tissues or extraneous matter adhering to plant surface. Function properties of *C. esculenta* L. leaf powder sample had swelling power 6.520±0.017g/g, water absorption capacity 7.28±0.255ml/g, oil absorption capacity 3.183±0.175ml/g, emulsion property 2.116±0.125%, foam property 8.1±0.095%, bulk density 0.3785±0.018ml/g, dispersibility 89.311±0.281% and *C. tora* L. swelling power 6.119±0.105g/g, water absorption capacity 5.113±0.115ml/g, oil absorption capacity 3.246±0.250ml/g, emulsion property 2.05±0.055%, foam property 4.236±0.367%, bulk density 0.647±0.025ml/g, dispersibility 93.566±0.404% respectively. Solubility test was done using different solvents aqueous, ethanol, ethyl acetate, hexane, petroleum ether, acetone, chloroform and methanol. The study revealed the presence of primary and secondary phyto-compounds in *C. esculenta* L. and *C. tora* L. Alcoholic and aqueous leaf extracts showed the presence of carbohydrate, protein, saponins, tannins, terpenoids, alkaloids and flavonoids. Fluorescence analysis showed the presence of various chemical constituents present in the plant material. These studies provided referential information for correct identification and standardization of these plant materials.

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PP68 | DRUG UTILIZATION REVIEW OF BISPHOSPHONATES IN A TERTIARY CARE HOSPITAL

Bibi Bergin R. V.[1]., A. Niventhi [1], Praveen D.[2], Ranadheer Chowdary[2], P. Vijey Aanandhi M.[3]
[1]Department of Pharmacy Practice, [2]Research Scholar, [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India.

Objective: The aim of the study is to present a drug utilization evaluation of bisphosphonates in the post-menopausal women in a tertiary care hospital. The main objective is to evaluate the effectiveness, safety and cost effectiveness of bisphosphonate therapy among the osteoporosis patients. Methods: A specially designed proforma was prepared to collect data including patients details, physical and lab investigation, past medical history and medication history. Informed consent has been obtained from the patients in both English and their local language. Results: Ibandronic acid was the most prescribed bisphosphonates in the study and though 150mg was prescribed to more number of patients. The PDD in the total population of 200 patients was found to be 5mg. Conclusion: This study indicates that antiresorptive agents were used in accepted dose regimens and they are preferred choice of drugs in Osteoporosis.

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PP69 | SAFETY AND EFFICACY OF CHOLECALCIFEROL SUPPLEMENTATION IN PULMONARY TUBERCULOSIS - A PROSPECTIVE SINGLE BLINDED STUDY

Yeswanth Prasanna Kumar B.[*1], Praveen D.[2], Ranadheer Chowdary P.[2], Vijey Aanandhi M.[3]

1Department of Pharmacy Practice, 2 Research Scholar, [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies, Chennai, India.
hodpchemistry@velsuniv.ac.in

Aim and Objectives: The aim of the study was to evaluate role of cholecalciferol as supplementation, safety and efficacy of cholecalciferol supplementation in patients with Pulmonary Tuberculosis. Methodology: A randomized single blinded study with patients with Pulmonary Tuberculosis. They are randomized into two groups. Patients in Group A received conventional tuberculosis therapy while the Group B receives Vitamin D3 (5,000 IU / Day) once besides Anti Tubercular Therapy. 40 patients were assigned in each group by randomized permuted blocks. Results: Vitamin D deficiency was detected in 56 Patients. Comparingthe two groups there is a rapid decrease in sputum conversion time. After 2 months of treatment in Group A 23 patients and in Group B 31 patients were found to be sputum negative. After 6 months of treatment in Group A 34 patients and in Group B 39patients were found to be sputum negative with minimal side effects in both the groups. Conclusion: Supplementation with the dose of Vitamin D3 accelerated the clinical improvement and host immune action in TB patients. Vitamin D3 is safe when added to Anti-Tubercular drugs.

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PP70 | A PROSPECTIVE STUDY ON THE EFFECT OF METFORMIN TREATMENT ON THE SERUM LEVELS OF VITAMIN B12 AND FOLIC ACID IN PATIENTS WITH POLYCYSTIC OVARY SYNDROME

V. P. Derbin Vijay, D. Mukilan, U. Sanvas, D. Praveen, M.Vijey Aanandhi

Polycystic Ovary Syndrome (PCOS) is one of the most common hormonal disorders in women. It is marked by a triad of symptoms that include: cardiovascular, metabolic and steroid hormone disturbances. Type II diabetes is common in PCOS and Metformin is the drug of choice to treat PCOS. The aim of this study was to investigate the effect of metformin on the levels of serum vitamin B12 and folic acid in patients with PCOS. Methodology: A Prospective Observational Study was designed with 80 patients with PCOS at the ESI Aynavaram general medicine ward with the study duration of 9 months. The study was conducted after obtaining informed consent from the patient. RESULTS: The mean vitamin B12 level showed a significant decrease in patients after9 months of metformin treatment (P = 0.002). There was a 20 % decrease in vitamin B12 levels and 15% in folic acid levels. Vitamin B12 and folic acid supplementation to PCOS women treated with metformin is essential in patients with PCOS. Conclusion: Use of Metformin in Polycystic ovarian syndrome gradually reduce the serum levels of Vitamin B12 and Folic acid.

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PP71 | COMPARISON OF CREATININE–BASED AND CYSTATIN C–BASED GFR ESTIMATING EQUATIONS IN TYPE 2 DIABETIC NEPHROPATHY PATIENTS

Dilip Timalsina[1], Dr. Parineeta Samant[1], Dr. Sandeep Rai[2]

[1]Department of Biochemistry,[2] Department of Medicine

Introduction: Diabetic nephropathy is the commonest cause of end-stage renal disease in the world. Approximately, 30% of patients with diabetes mellitus (DM) develop diabetic nephropathy and ultimately increase in incidence of CKD. Diagnosis of CKD and assessment of kidney function is done by calculating estimated glomerular filtration rate (eGFR), checking urinary albumin-to-creatinine ratio commonly. It is proposed that Cystatin-C is an early predictor of kidney function.

Hence the study is undertaken to evaluate predictive value of cystatin-C based GFR rate in Diabetic nephropathy patients. Aim & Objective: To evaluate and correlate levels of serum creatinine based glomerular filtration rate and cystanine-C based glomerular filtration ratein diabetic nephropathy patients. Methodology: The study was carried out in the Department of Biochemistry and Department of Medicine, MGM Medical College, Kamothe, Navi-Mumbai. Thirty health controls were enrolled in Group I & Forty known cases of type 2 diabetes with nephropathy as per guidelines defined by National kidney foundation; 2012 were enrolled in the Group II. Result: Statically significance difference was found in serum creatinine and serum Cystatin-C levels when compared with controls ($p< 0.05$) andMean value of creatinine based GFR was 35.0 ml/min per 1.73 m^2, whereas cystatnin-Cbased GFR was 28 ml/min per 1.73 m^2. Conclusion: Creatinine based eGFR equations may not perform well in diabetic nephropathy population.CKD-EPI eGFR based on serum cystatin-Cremains the preferred equation compared to CKD-EPI eGFR based on serum creatinig in assessing the kidney function in diabetic nephropathy patients.

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PP72 | GROWTH INHIBITION OF *SALMONELLA* SP., BY ENDOPHYTE BACTERIA

Gowthami G. A. and Manjula I. Kalyani*
Department of Studies and Research in Microbiology, Mangalore University, Jnana Kaveri, P G Centre, Chikka Aluvara, Kodagu-571232
manjuganesh7176@gmail.com

The interaction of endophyte bacteria with their specific host medicinal plant is considered important natural resources for therapeutic prospecting of biomolecules. Studies have shown that, the medicinal properties of plants are attributable to their microbial endophyte composition. Hence, many compounds and metabolites have been extracted from endophyte bacteria isolated from a diverse plant source. These metabolites either in pure or in crude form have shown different bioactivity such as antibacterial, antifungal, anti-tumor, anti-parasitic, antiviral, antioxidant, anti-inflammatory and immunosuppressive drugs. In the present study *Pajanelia longifolia* a prominent medicinal plant growing in the Western Ghats in Karnataka, was selected and analysed for the endophytic bacteria. The procedure for endophytic bacterial isolation was carried out that resulted in the isolation of six endophytic bacteria. The isolates differentiated from one another based on their morphological and biochemical properties. The isolates were identified belonging to *Enterococcus* and Micrococcus Sp., All the isolates were subjected for intracellular extractions after their mass culturing in media. The intracellular metabolites from one of the endophyte bacteria belonging to *Enterococcus* showed significant growth inhibition of *Salmonella* Sp., when tested by well diffusion antibacterial technique.

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PP73 | CLINICAL ASSOCIATION OF SERUM FIBRINOGEN, PLATELETS AND SERUM ALBUMIN IN DIABETIC FOOT ULCER PATIENTS

Jayalakshmi N*, D. Praveen, P. Ranadheer Chowdary, M. Vijey Aanandhi

The objective of the study is to estimate the levels of serum fibrinogen, platelets and serum albumin in diabetic foot ulcer patients and in diabetic patients**.** Introduction: Diabetic foot ulcer is the complication of diabtes mellitus .Wound healing is an innate mechanism of action that works reliably most of the time.Wound healing is a step wise repair of lost extracellular matrix that forms the largest component of the dermal skin layer.But in diabetic foot ulcer cases, wound healing process is disturbed.This leads to the changes in the levels of serum fibrinogen, platelets and serum albumin in diabetic foot ulcer patients. Materials And Methods:The prospective cross sectional study was conducted and the data was obtained by performing complete blood count test,serum fibrinogen test and serum albumin test.Rao soft online software is used to analyse the data Results And Discussion: In diabetic foot ulcer patients,serum fibrinogen and platelet level is raised due to the thrombosis occurring near ulcer regions and serum albumin level is decreased due to the loss of blood and fluid

when compared with diabetes patients without foot ulcer.Conclusion**:**Serum fibrinogen and platelets level is increased and serum albumin levelis decreased in the diabetic foot ulcer patients

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PP74 | SAFETY, EFFICACY AND QOL OF HYDROXYCHLOROQUINE AND METHOTREXATE AS A COMBINATION V/S METHOTREXATE AS A MONOTHERAPY IN RHEUMATOID ARTHRITIS: A COMPARATIVE SINGLE-BLINDED PROSPECTIVE STUDY

Joyita Krishnamurthi*[1], Praveen D.[1a], Ranadheer Chowdary[1a], M. Vijey Aanandhi[2].
[1]Department of Pharmacy Practice; [1a]Research Scholar, Department of Pharmacy Practice;
[2]Department of Pharmaceutical chemistry and Analysis. School of Pharmaceutical Sciences, Vels Institute of Science and Technology and Advanced Studies, VISTAS, Chennai 600117.

Background: Rheumatoid Arthritis (RA) is a long-term auto-immune inflammatory disorder that primarily affects the joints of the limb. It typically results in classical symptoms like warm, swollen and painful joints. A number of powerful disease-modifying anti-rheumatic drugs have become available, such as Methotrexate (MTX). Hydroxychloroquine when given as adjuvant therapy in combination with MTX decreases the disease activity index and show more rapid response through both, being a slow drug. Objective: The objective of the study is to evaluate the Safety, Efficacy, Disease Activity Index, Haematological changes, pre and post treatment and QoL ofHydroxychloroquine and Methotrexate as a Combination V/s Methotrexate Monotherapy Materials arm only methotrexate (15mg/kg) is administered to patients having Rheumatoid Arthritis in oral form. The biomarkers such as C - reactive protein, Erythrocyte Sedimentary Rate, AntiCirtrulline Antibody, Mean Platelet Volume, Neutrophil Lymphocyte Ratio, Rheumatoid factor, Platelet Distribution Width andPlateletcrit are used to check the efficacy of the drugs pre and post treatment. The QoL was done with SF –12 Questionnaire. Results: The results unequivocally establish, significant difference in the combination group as compared to the Monotherapy group, there by making it as the effective and safe among the two groups. The disease activity index and the QoL were better with patients who were treated with the combination group. Conclusion: Combination group produced synergic effect and showed lesser side effects than the Monotherapy group.

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PP75 | *IN VITRO* INHIBITION OF GLYCATION BY ANTI-DIABETIC HERB (ONION) AND EXOGENOUS ANTI-OXIDANT (VITAMIN C) IN RELATIONSHIP WITH THE LEVEL OF REDUCING POWER OF EACH

Vishwakarma Komal, Bhadarge GL, Badade ZG, Badade VZ and Narshetty GS
Biochemistry Dept., MGM Medical College, Navi Mumbai, ICLES MJ College, Vashi
badadezg@gmail.com

Diabetes mellitus is associated with significant morbidity, mortality and its prevalence increase worldwide. The antidiabetic agents known to control symptoms of diabetes. There is decline in beta cell function of pancreas and insulin sensitivity in type 2 diabetes mellitus, which results in deteriorating glycaemic control. This led to advanced glycation end product (AGE) which is major case of diabetic complication. Oxidative process is believed to play important role on AGE formulations, which are inhibited by exogenous antioxidants herbs and endogenous antioxidants herbal formulation. Aim and objective: The objective of present study is to investigate to inhibition of glycation by antidiabetic herb i.e onion and exogenous antioxidant Vitamin C, with relationship level of reducing power of each. Material and methods Bovine serum albumin and haemoglobin were

glycated with glucose and fructose in presence and absence of inhibitors, natural extracts (Aqueous and ethanolic) and exogenous antioxidants in vitro using method of thermal glycation and method by fluckigr et. al. respectively, absorbance was measured. Conclusion: Antioxidant property of extract was measured by reducing power assay by limli yua et.al. The entire antidiabetic herb onion decreases AGE formulation in vitro while Vitamin C accelerates. Results: Our result shows antidiabetic herb Onion and Vitamin C prevents diabetes and further complication.

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PP76 |CLINICAL ASSOCIATION OF SERUM CALCIUM LEVELS IN PRE-ECLAMPSIA AND GESTATIONAL HYPERTENSION PATIENTS – A PROSPECTIVE OBSERVATIONAL STUDY

S. Lakshmi Kanthamma[1]*, M. Vijey Aanandhi[2], Praveen D.[1a], Ranadheer Chowdary P.[1a]

[1*] Department of Pharmacy Practice, School of Pharmaceutical Sciences

[1a] Research Scholar, Department of Pharmaceutical Chemistry,

[2] Department of Pharmaceutical Chemistry and Analysis,

School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (Vistas), Chennai- 600117.

Aim and Objectives: To evaluate serum calcium levels and to study the role of calcium in pre-eclampsia and gestational hypertension. Materials and Methods: A prospective observational study design was used with the help of standard data entry forms and serum calcium test was performed.

The neonatal assessment was collected to study the role of calcium in pre-eclampsia and gestational hypertension. Results: The study was conducted in 108 patients. 54 patients were diagnosed with pre-eclampsia and 54 patients were diagnosed with gestational hypertension. Serum calcium level was found to be decreased in both groups. Management with calcium supplements (2.0g elemental calcium/day) reduces preterm birth and the occurrence of the composite outcome 'maternal death or serious morbidity based on neonatal assessment. Conclusion: Calcium supplement is a safe and relatively cheap way of reducing the risk of pre-eclampsia, especially in women from communities with low dietary calcium and those at increased risk of pre-eclampsia and gestational hypertension.

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PP77 | ANTIOXIDANT AND ANALGESIC ACTIVITY OF LEAF EXTRACTS OF *ARTOCARPUS HETEROPHYLLUS*

Monish Raj R.[1], Praveen D.[2], Ranadheer Chowdary P. [2],Vijey Aanandhi M.*

[1]Department of Pharmacy Practice, [2]Research Scholar, [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India.

Background: Traditional Indian medicine has always found its way for the treatment of multiple diseases and conditions. Artocarpus heterophyllus is a common plant and can easily be exploited for its rich medical heritage Methods: Two leaf extracts were made. Both the aqueous and ethanolic extracts were subjected to phytochemical screening. Analgesic property was established with the help of Eddy's hot plate, acetic acid induced writhing, Tail Flick methods. One-way ANOVA was used to correlate the significance $p<0.005$. Antioxidant properties were evaluated with DPPH and Nitric oxide scavenging activity. Results: The ethanolic extract shows a statistically significant ($p<0.005$) correlation towards the analgesic activity in both the methods namely hot plate method and writhing method. The ethanolic leaf extracts showed the following phytochemicals—Flavonoids, phenols, terpenoids, saponins, and steroids, while the aqueous extracts showed the presence of flavonoids, phenols, saponins and steroids. Both the extracts showed significant antioxidant activity. Conclusion: This study shows the phytochemical evaluation and analgesic activities of both the extracts. Hence further studies should be made to isolate the necessary constituent for both the activities.

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PP78 | ENTEROBACTERIACEAE AT THE EPITOME IN BILIARY TRACT INFECTIONS: A GUIDE TO EVIDENCE-BASED THERAPY.

Mrudgandha Purandare****,** Asha*, Rajni KV*, Srilaxmi MS*, Vignesh Shetty**, Sohan Bangera**, Suganthi Martena**, Mamatha Ballal**.

*Department of Microbiology, Kasturba Medical College, Manipal.

**Enteric Diseases Division, Department of Microbiology, Kasturba Medical College, Manipal.

Background Biliary tract infections are usually characterized by acute cholecystitis which is an acute inflammation of the gall bladder wall and cholangitis which is an inflammation of the bile ducts. Most of the biliary tract infectionsare generally secondary to predisposing factors such as gall stones, biliary obstruction, increased intra-luminal pressure. Objective: The present study was conducted to determine the predominant aetiological agent in causing biliary tract infection for developing appropriate empirical therapy. Methodology: This was a retrospective study conducted in the Enteric Disease Division, Manipal University Karnataka from January 2011 to December 2016. Patients with suspected biliary tract diseases who were admitted to the tertiary care hospital were included in this study. Results: 307 Bile samples were tested, out of which 187(60.91%) were positive for culture.

Amongst all the isolates, Enterobacteriaceae family (84.79%) was the predominant isolate in which *Escherichia coli* (44.4%), the most isolated pathogen was followed by *Klebsiella pneumoniae* (27.3%). Among the anaerobic and fungal pathogens were also isolated in which *Bacteroides fragilis (35.75%)* and *Candida spp* (6.9%)were the principal organisms isolated.ConclusionBiliary tract infections have a substantial morbidity and mortality. Although de-obstruction of biliary tract is the corner stone of treatment. Targeted antimicrobial therapyis just asimperative in such cases to avoid recurrent infections and complications.

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PP79 | PREVALENCE OF HEPATITIS B AMONG SMEAR POSITIVE TUBERCULOSIS PATIENTS IN RURAL TAMILNADU

D. Mukilan[1*], P. Ranadheer Chowdary[2], D.Praveen[2], M.Vijey Aanandhi[3]

[1]Department of Pharmacy Practice, [2]Research Scholar, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India. [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India.

Introduction: A Prospective hospital based study was carried out in order to assess the prevalence of Hepatitis B virus (HBV) co-infections among sputum positive and active tuberculosis (TB) patients attending the Outpatient Department (OPD) in RNTCP cell at a Tertiary care hospital, a rural area in Erode district of Tamil Nadu.Methodology: A prospective epidemiologic observational study in which Patients who were confirmed with tuberculosis through any standard protocol has been included in the study and those with hepatocellular carcinoma has been excluded from the study.The sample size was estimated to be 380. Results: Out of 380 patients, 89 patients were found to be HbsAg positive with the Prevalence rate of 23.42% and the incidence rate is found to be higher in men than women Conclusion: The study concludes that Hepatitis B prevalence is more predominant in patients with TB-HIV synergy. Hence it is an important necessity to screen the Tuberculosis Patients for Hepatitis B co-infection.

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PP80 | A PROSPECTIVE STUDY ON CLINICAL ASSOCIATION OF SERUM METHYL MALONIC ACID, COBALAMINE IN PATIENTS ON METFORMIN COMBINATION THERAPY FOR DIABETIC NEUROPATHY

Nirenjen S.[1], Yeswanth B.[1], Praveen D.[2], Ranadheer Chowdary P.[2], Vijey Aanandhi M.[3]

[1]Department of Pharmacy Practice, [2]Research Scholar, [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India.

Background: About 1% of the total population suffered by the Diabetes Mellitus, it is the most common of all endocrine disorders. Patients with Type-II Diabetes Mellitus for the longer period of time eventually develops Diabetic complications (i.e) Neuropathy. Guidelines have recommended Metformin and its combinations for first line therapy which has some role in altering Methyl malonic acid and Cobalamine levels. Methods: A Prospective case-controlled study conductedon Patients with Type-II Diabetes Mellitus with macrovascular complication of Diabetic Peripheral Neuropathy. The patients with type II Diabetes Mellitus with Diabetic Neuropathy were classified on two groups- Group A with Metformin -Glibenclamide, Pergabalin and Gabapentin, Similarly Group B with Metformin –Sitagliptin, Pergabilin and Gabapentin. Comparision were made using clinical laboratory readings of the patients such as serum cobalamine and Methyl Malonic acid etc. Results: At the end of the study, it is noted that the biochemical parameters such as Methyl malonic acid and cobalamine were decreased significantly in Metformin-Glibenclamide combination therapy than the Metformin -Sitagliptin combination therapy. Conclusion: The study concluded that Metformin -Sitagliptin combination is preferred than other combination in the treatment of diabetic Neuropathy as they do not precipitate Vit B 12 deficiencies. Vitamin B12 supplements are recommended along with this Metformin -Sitagliptin combination.

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PP81 | EFFECT OF ORAL HYPOGLYCEMIC AGENTS ON THEOPHYLLINE PHARMACOKINETICS IN ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS – A RANDOMIZED CONTROLLED PILOT STUDY

A. Niventhi[*1], Praveen D.[2], Ranadheer Chowdary P.[2], M.Vijey Aanandhi[3]

[1]Department of Pharmacy Practice, [2]Research Scholar, [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India.

niventhianandraj@gmail.com

Background: An exacerbation of COPD is an event in the natural course of COPD characterised by an acute change in the patient's baseline dyspnoea or breathing difficulty, cough and sputum production. The methylxanthine theophylline has demonstrated efficacy in attenuating the three cardinal features of asthma - reversible airflow obstruction, airway hyper responsiveness, and airway inflammation. At doses achieving relatively high serum levels in which toxic side effects are sometimes observed, direct bronchodilatory effects of theophylline are recognized. At lower serum concentrations, theophylline is a weak bronchodilator but retains its capacity as an immunomodulator, anti-inflammatory, and Broncho protective drug. Methodology: A randomized control study is carried out to assess the effect of oral hypoglycaemic agents on theophylline pharmacokinetics..A total of 6 blood samples (5ml) was drawn from each participant at 0 hours, ½ an hour, 1st hour, 3rd hour, 6th hour and finally at 12th hour to evaluate pharmacokinetic parameters such as AUC_{0-t}, $AUC_{0-\infty}$, $C_{max}$are to be assayed for the two types of patients to determine the effectiveness of the treatment given. Result: Theophylline pharmacokinetics were studied in patients with and without diabetes. Oral Hypoglycaemic agents reduced the area under the concentration – time curve by 12% after the administration of

hypoglycaemic agents in diabetic patients and decreased metabolic clearance and volume of distribution by 16% after administration of theophylline 150mg. Conclusion: In patients receiving theophylline blood glucose levels to be monitored if the patient is on Oral hypoglycaemic therapy and the dosage is to be adjusted.

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PP82 | ANTI-EDEMAATIC AND INVITRO ANTI-OXIDANT ACTIVITY OF METHANOLIC EXTRACT OF *ZIZUPUS OENOPLIA* FRUIT

Nutan S.R.[1], Giresha A.S.[2] *

[1]Department of Studies in Botany, [2]Department of Studies in Biochemistry, Jnana Kaveri Campus Mangalore University, Chikka Aluvara, Kodagu, Karnataka, India.

girishas25@gmail.com

Inflammation is a localized physical condition in which part of the body becomes reddened, swollen, hot, and often painful, especially as a reaction to injury or infection. Free radicals and related species such as reactive oxygen species/ROS and reactive nitrogen species/RNS were generated by various endogenously, physicochemical exposure or pathophysiological states able to alter lipids, proteins and DNA and have been implicated in aging and several human diseases. Synthetic anti-inflammatory drugs are not readily available and have adverse side effects. *Ziziphus oneoplia* (Rhamnaceae) is a small subdecidous wild edible fruit plant in western gats commonly known as Indian jujube. The leaves of Ziziphus oneoplia are traditionally used to cure diarrhoea, syphilitic ulcers, asthma, stomatitis and gum bleeding and also used as poultice and astringent. The aim of the present study was to explore the probable anti-inflammatory activity of methanolic extracts of *Zizupus oenoplia* (MEZO) using Carrageenan induced edema in the mice and *In vitro* anti-oxidant activities such as DPPH, ABTS free radicals, Anti-lipd peroxidation and reducing power activity. Further, the qualitative phytochemical screening indicated the presence of saponins, flavonoid, alkaloids, terpenoids, and phenolics. Anti- oxidant activity and Edema ratio decreased in a dose dependent manner. The edema reduced from 172.5 ± 3.26% to 137.34 ± 3.26% at 20 μg) ($p < 0.001$) and IC_{50} values for Anti-oxidant activity was raging from 36-162 μg. On the basis of these findings, it may be inferred that *Zizupus oenoplia* is an antiinflammatory and anti-oxidant agent by neutralizing Carrageenan induced edema inducing activity along with free radical scavenging activity. Hence the fruits are edible there is no possibility of side effects. This article focuses on our current knowledge of plants which have anti-inflammatory activity and discusses their potential therapeutic use in the management relevant inflammatory diseases.

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PP83 | A PROSPECTIVE STUDY ON ROLE OF VITAMIN E SUPPLEMENTATION IN TYPE 2 DIABETES MELLITUS

D. Pavithra, D. Praveen, P. Ranadheer Chowdary, M. VijeyAanandhi

[1] Department of Pharmacy Practice, [3]Department of Pharmaceutical Chemistry and Analysis [2] Research Scholar, School of Pharmaceutical Sciences, Vels Institute of Science, Technology & Advanced Studies, Chennai, Tamil Nadu, India.

Aim and Objective: To evaluate the Role of Vitamin E Supplementation in Type II Diabetes Mellitus.To determine whether people with Type II Diabetes Mellitus treated with hypoglycemic agents alone, with or without Vitamin E. To determine the drug interaction in such treatment regimen. To evaluate the Safety of the regimen Methodology: Type II DM patients with or without complications were included in this study along with serum HbA1c concentration above 7.5%. They are divided into Test group (which received Hypoglycemic agents along with Vitamin E) and control group. BMI status, Fasting Blood Sugar (FBS), Post-prandial Blood Sugar (PPBS) was noted once in a month, HbA1C Percentage, Total cholesterol level(TC) and Serum Vitamin E level were estimated and noted for every 3months at total 9moths of this study. Patients with other comorbid conditions were prominent in this study. Result: It is perceptible with the analysis of obtained data that FBS, PPBS, HbA1c Percentage, TC level, BMI status of the patients were declined gradually in Test group (patients with Vitamin E supplementation along with their hypoglycaemic agents). Thus, the anti-oxidant therapy is highly propitious where by delaying the onset of complications in patients with

DM. This development would be highly helpful for diabetic patients. Conclusion: Vitamin E therapy in DM significantly reduces HbA1C and Fasting Blood sugar, Post-prandial in subjects with low and Poor Glycemic control. Thus, a long-term antioxidant therapy –Vitamin E is beneficial, as it slows down the onset and slowing down the progression of complications.

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PP84 | ASSOCIATION OF SERUM HOMOCYSTEINE IN DIABETIC NEUROPATHY

T. Rujaswini[1], Praveen D[2], Ranadheer Chowdary P[2], Vijey Aanandhi M[3]

[1]Department of Pharmacy Practice, [2]Research Scholar, [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India. rujaswini@gmail.com

homocysteine in Diabetic Neuropathy patients. Methodology: All the patients who were diagnosed with type II diabetes mellitus will be included. Their serum levels of fasting blood sugar (FBS), post prandial blood sugar (PPBS), glycated hemoglobin (HbA1C) and associated blood parameters will be assessed. Diabetic neuropathy will be confirmed using Nerve conduction testing (NCT), Electromyography (EMG) and Quantitative sensory testing with clinically correlated. The serum homocysteine levels will be measured and correlated with other blood parameters. Results: Out of 1000 patients, 46 were Type I Diabetic and 954 were Type II. Prevalence of Neuropathy in diabetic patients was 156. Mean Serum Homocysteine without diabetic neuropathy was 6.8 + 2.9 and serum homocysteine with Diabetic neuropathy was 21.6 + 0.29 and the p value was found to be 0.0017. The correlation between Serum homocysteine and Diabetic Neuropathy was found to be 14.5 with the p value 0.001. Conclusion: There has been a significant increase of homocysteine in diabetic patients. It can be clearly seen that elevated serum homocysteine level has leads to the some of the complications of diabetic neuropathy.

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PP-85 | ANTIDIABETIC AND ANTIHYPERLIPIDEMIC ACTIVITIES OF AQUEOUS AND ETHANOLIC LEAF EXTRACTS OF FERONIA LIMONIA

U. Sanvas[1*], P. Ranadheer Chowdary[2], D. Praveen[2], M. Vijey Aanandhi[3]

[1]Department of Pharmacy Practice, [2]Research Scholar, [3]Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai, India.

Background: Traditional drugs can be used as a novel alternative for synthetic agents. All the synthetic agents possess risk of multiple side effects. Hence, a previously traditionally used drug, Feronia limonia is studied for its antidiabetic and antihyperlipidemic effects. Methods: Ethanolic and aqueous leaf extracts of different concentrations were tested for antidiabetic capabilities on streptozotocin (500 mg/kg I.P)-induced diabetic Swiss albino mice, fasting blood glucose, glycosylated hemoglobin, body weight, lipid profile test, and preliminary phytochemical screening for extracts were also carried out. Results: Significant antidiabetic activity characterized by significant reduction in blood glucose level and glycosylated hemoglobin was observed with ethanolic extract (200 mg/kg) at 14 days of treatment compared with glibenclamide (500 mcg/kg, I.P). Both these extracts showed significant reduction in total cholesterol, triglycerides, and low-density lipoproteins and also on certain liver markers. Conclusion: The study concludes that F. limonia leaf extracts show a significant antidiabetic and antihyperlipidemic activity. Hence, the constituents are isolated for further research.

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PP-86 | *INVITRO* ANTI-OXIDANT ACTIVITIES AND PHYTOCHEMICAL CONTENT OF AQUEOUS EXTRACTS OF *VERNONIA ANTHELMINTICA* (BLACK/BITTER CUMIN) SEED

Spandana S.S.[1], Nutan S.R.[1], Nethravathi B.T.[1], Giresha A.S.[2 *]

[1]Department of Studies in Botany, [2]Department of Studies in Biochemistry, Jnana Kaveri Campus, Mangalore University, Chikka Aluvara, Kodagu, Karnataka, India

spandanass1996@gmail.com

Various free radicals and related species such as reactive oxygen species/ROS and reactive nitrogen species/RNS were generated by various endogenously, physicochemical exposure or pathophysiological states able to alter lipids, proteins and DNA and have been implicated in aging and Aim and Objectives: The main aim of the study was to find out the association of serum several human diseases. Bioactive compound/s for anti-oxidant, anti-inflammatory activity without any side effect is best therapy for inflammatory diseases.powder is used as a diuretic, tonic, anthelmintic, purgative and to treat snake bites. According to Ayurveda, seeds are hot, acrid, astringent, and anthelmintic; cure ulcers, vata and kapha also to cure skin disease, leucoderma and fever. In this context, sequential solvent extracts of *Vernonia anthelmintica* (kahi jirige/ bitter cumin) seed, was subjected to estimation phytochemical and evaluate antioxidant property. Among the extracts, aqueous *Vernonia anthelmintica* seed extract of (AqVA) exhibit higher levels of Phenolics, tannins, flavonoids, alkaloids and saponins (phytochemical) followed by ethanol and water extract. The DPPH, nitric oxide, superoxide free radical scavenging activity and reducing power capacity of AqVA exhibit increased activity by increased concentration. IC_{50} values of AqVA ranged from 80.25µg/ml to 191µg/ml. Hence, *Vernonia anthelmintica* exhibit good natural anti-oxidant and anti-inflammatory activity my serve as alternative for synthesized anti-inflaamtory drugs. Further, isolation of bioactive compounds required for identifying the unknown compounds to establish their pharmacological properties

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PP87 | CHICKEN BRAIN MITOCHONDRIAL ELECTRON TRANSPORT CHAIN COMPLEX-I SPECIFIC ACTIVITY: IN VITRO EFFECTS OF PARKINSONIAN NEUROTOXINS

Vanishree V. M.

Main Women's Hostel, Mangalagangotri, Mangalore University

Konaje-574199, Mangalore, Dakshina Kannada

Parkinson‘s disease (PD) is the second most common and debilitating age-associated neurodegenerative disorder affecting more than 10 million people worldwide.Studies on human subjects and in preclinical animal models of PD implicate dysfunctions of mitochondria as the major factor for the degeneration of SNpc neurons and it has shown that the mitochondrial ETC mitoCx I in PD brain is oxidatively damaged, which canbe experimentally reproduced by blockade at the ubiquinone (Q)reduction site with rotenone. Rotenone represents the class of compound known as *rotenoids''*. It exhibits mild toxicity in humans and other mammals, when small doses are exposed for long duration. Mechanistically, it interferes with mitochondrial electron transport chain (ETC) system, by irreversibly binding with the mitoCx1, causing blockade of ATP production leading to cell death. Another neurotoxin, MPP^+ (1-methyl-4-phenylpyridiniumion) is known to inhibit the oxidative phosphorylation process in mitochondria, leading to neuronaldeath. This study mainly focuses on *in vitro* effects of rotenone or MPP^+on activity of electron transport chain complex-I enzyme in chicken brain mitochondrial P_2 fraction, where mitochondrial P_2 fraction was isolated from chick brain by refrigerated ultra-centrifugation. Protein was estimated by Bradford method and it was found to be 39mg/mL. Specific activity of mito Cx1was determined, followed by the effect of neurotoxins (rotenone and MPP^+) by using ferricyanide as an electron acceptor instead of coenzyme Q. The insensitivity is due to the fact that these neurotoxins act at the O_2 side and not at the substrate side of the flavoprotein, where ferricyanide accepts the electron. The future perspective includes checking for the *in vitro* effect of few ayurvedic medicines on rotenone or MPP^+ induced Parkinsonism.

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REVIEW POSTERS

RP01 | REVIEW ON CATHARANTHUS ROSEUS: A MIRACULOUS MEDICINAL PLANT

Amrutha. S and Manjula Shantaram*

Department of Studies & Research in Biochemistry, Mangalore University, Jnana Kaveri PG Centre, Chikka Aluvara, Kodagu, 571 232
manjula59@gmail.com

Medicinal plants have been discovered and used in traditional medicine practices, not necessarily effectively, since prehistoric times. The World Health Organization estimates, without reliable data, that 80 percent of the world's population depends on traditional medicine and are largely reliant on medicinal plants. Catharanthus roseus (L), known as Madagascar periwinkle (MP), belongs to the family Apocynaceae. The plant has been called a miracle in the prevention of childhood leukaemia and cancer treatment. It is approved by the US Food and drug administration (FDA) for use in chemotherapy. The plant also has a long history of use in Ayurvedic medicine, traditional Chinese medicine and western medical science. It has been traditionally used as a folk remedy for diabetes, malaria, different types of cancer and other serious diseases. The drugs from plant source are fairly harmless and relatively free from toxic effects. However, the plant is unsafe to use due to high toxic alkaloids present in it. There are tremendous medicinal uses from this plant along with few side effects. In this review, attempts have been made to highlight the benefits and ill effects of the plant on health in order to treat various diseases using appropriate dosage.

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RP02 | A REVIEW ON MEDICINAL *IMPORTANCE OF CLERODENDRUM ACULATUM*

[1]Chethan M. U., [2]Shalini H. R, [3]N Monisha, [4]Dhananjaya N A, [5]Mallesh D, [6]Poojith P S, *Manjula Shantaram

[1-6]Department of Studies in Biochemistry, Mangalore University, Post Graduate Centre ChikkaAluvara, 571 232, Kodagu, Karnataka, India
Manjula59@gmail.com

Medicinal plants are essential natural resource which constitutes one of the potential sources of new products and bioactive compounds for drug development. It is estimated that about 60% of the world population and 80% of the population of developing countries rely on traditional medicine for their primary health care needs. Traditional medicinal uses contribute significantly to such drug development. The Clerodendrum aculeatum as a medicinal plant in tropical region, it has slightly aromatic stems and these plants are highly used in Ayurveda and village medicine for snakes and scorpion bite etc. This review attempts to highlight on the overview of *Clerodendrum aculatum* which is used in large number of medicines for the treatment of various life threatening diseases such as syphilis, typhoid, jaundice, and hyper tension. Extracts of roots, leaves and stems are used as medicine for the treatment of asthma, malaria and diseases of blood, skin and lungs, breast cancer.

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RP03 | CHARACTERIZATION AND IDENTIFICATION OF TRICHODERMA AND PGPR ON GINGER PLANT

Manjunath B.S.[1] and Chaitra[2]

[1]Department of studies and Research in Microbiology, Jnana kaveri P.G Centre, Chikka Aluvara
[2] Kodagu Agritech-Eco, Kudlur, Khushalnagar

Trichoderma species are adapted to diverse habitats and are naturally found in soil, decaying wood, compost, roots and above ground plant organs. Plant growth promoting rhizobacteria (PGPR) is a group of bacteria that can be found in the rhizosphere. The term ―plant growth promoting bacteria‖ refers to bacteria that colonize the roots of plants (rhizosphere) that enhance plant growth. Rhizosphere is the soil environment where the plant root is available and is a zone of maximum microbial activity resulting in a confined nutrient pool in which essential macro- and micronutrients are extracted. To this end the present study was carried out to analyze soil microbial diversity and Plant growth promoting Rhizobacteria (PGPR) for utilization for improvement of zinger plant. The present results concluded that the multiple beneficial activities of PGPR traits increase the plant growth and bio-control activity.

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RP04 | A REVIEW ON MEDICINAL PLANTS AND PHYTOCHEMICALS FOR STOMACH ULCER

Srinivasa K, and Manjula Shantaram*
Department of Studies & Research in Biochemistry, Mangalore University, Jnana Kaveri
P G Centre, Chikka Aluvara, Kodagu, 571 232
*manjula59@gmail.com

Plants are the basis of life on earth and are central to people's livelihoods. The use of plants in religious ceremonies as well as for magic and medicinal purposes is very conventional and prevalent. Medicinal Plants and phyto-constituentsare better choice to treat diseases than the allopathic drugs. Most of the drugs used in primitive medicine were originated from plants and are the earliest and principal natural source of medicines. The drugs from plants are fairly harmless and relatively free from toxic effects. The nature has provided us various medicinal plants which became the storehouse of remedies to cure all ailments of mankind. Stomach ulcers, also known as gastric ulcers, are painful sores in the stomach lining. Gastric ulcer is widespread and common health problem now a days. Generation of free radicals, decrease in mucosal defensive factor or increase in mucosal injurious factor causes gastric ulcer. In this review attempts have been made to know about some plants and their constituents which may be used in treatment and prevention of Stomach ulcers.

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RP05 | A **REVIEW ON STEM CELLS OF UMBILICAL CORD BLOOD**

Varsha Jayakar and Manjula Shantaram*
Department of Studies & Research in Biochemistry, Mangalore University, Jnana Kaveri
P G Centre, Chikka Aluvara, Kodagu, 571 232
manjula59@gmail.com

Stem cells are unique which are obtained from a broad range of tissues with different features related to proliferation capability and differentiation capacity. The trans-differentiating potential of stem cells varies with source.Cord blood is the blood found in the vessels of the umbilical cord and placenta. It has been shown that this blood comprises at least three populations of stem cells, each with exclusive features and properties. The cord blood is observed as the ―life line‖ that supplies the developing fetus with the significant nutrition elements and oxygen required for proper fetal development. Beside its role in development, umbilical cord blood has been also involved in therapeutic applications, which was reported for the first time in 1972 by clinicians in the United States to treat a case with lymphoblastic leukaemia. Cord Blood contains multiple populations of pluripotent stem cells and can be considered the best alternative to embryonic stem cells. Cord blood stem cells are capable of giving rise to hematopoietic, epithelial, endothelial and neural tissues both *in -vitro* and *in- vivo.* Thus, cord blood stem cells are amenable to treat a wide variety of diseases including cardiovascular, ophthalmic, orthopaedic, neurologic and endocrine diseases.

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RP06 | A REVIEW ON SMALL CELL AND NON-SMALL CELL LUNG CANCER: BENEFITS AND HARMS OF TREATING NSCLC.

Vinayak Lokapur and Manjula Shantaram*
Department of Studies & Research in Biochemistry, Mangalore University, Jnana Kaveri P G Centre, Chikka Aluvara, Kodagu, 571 232
manjula59@gmail.com

Lung cancer is a large and exceptionally heterogeneous family of malignancies. Small cell lung cancer (SCLC) and Non-small cell lung cancer (NSCLG) are two different types of primary lung cancer that arise in the lungs. SCLC appear small and round in microscope and is usually caused by smoking, leading to 15% of all lung cancer patients when diagnosed whereas NSCLC are larger in size and is most common type resulting in 85% of total lung cancer patients. The symptoms and causes of small cell and non-small cell cancers are largely similar. Statistics on survival for both cancer types are given in terms of 5-year survival rates depending on Staging of the cancer which provides important information for treatment. SCLC has two stages (Limited stage and Extensive stage) and NSCLC has 4 stages ranges from I or II (early stage), stage III (locally advanced) and stage IV (metastatic). Advanced treatment for SCLC involves concurrent chemotherapy (CT), thoracic radiation therapy (TRT) and prophylactic cranial irradiation (PCI) whereas NSCLC has 5 basic ways to treat i.e., Surgery, Radiation therapy, Chemotherapy, Targeted therapy and Immunotherapy. This review attempts to highlight the benefits and harms reported in various diagnostic therapies involved in the treatment of NSCLC.


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Mangalore University Mangalagangothri, Konaje - 574199

Jnana Kaveri, Post Graduate Centre, Chikka Aluvara, Kodagu

Department of Studies and Research in Biochemistry
Jnana Kaveri, Post Graduate Centre, Chikka Aluvara, Kodagu - 571232
Karnataka, India