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on
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Abstract Volume

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**SERB-DBT-CSIR SPONSORED INTERNATIONAL CONFERENCE on
INTERDISCIPLINARY INTERACTION ON NON-COMMUNICABLE DISEASES****Dr. S. Manoharan***Conference Director, Department of Biochemistry & Biotechnology, Annamalai University
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ABSTRACT

The international conference on “Interdisciplinary interaction on non-communicable diseases (NCD-2017)” was organised by the Department of Biochemistry and Biotechnology in association with the Department of Pharmacy, Department of Zoology and Department of Medical Biochemistry in the Tech-Park Hi-Tech Hall, Annamalai University from 22nd -24th September 2017. Prof. Dr. S.Manian, Vice-Chancellor, Annamalai University delivered inaugural address and emphasized about the role of natural products in the prevention and control of non-communicable diseases (NCD). Prof. Dr. K.Arumugem, Registrar, Annamalai University delivered special address to the gathering and emphasized a need for joint collaborations with the foreign Universities. Prof. Dr.S.Kabilan, Dean, Faculty of Science and Prof.Dr.Antony Jeyasehar felicitated the gathering. Prof. Dr.C.V.Anuradha conference Chairman (NCD-2017) delivered presidential address. Dr. P.K. Manna, Professor and Head, Department of Pharmacy briefed about the conference and about the need of interdisciplinary studies/research. Dr.S.Manoharan conference Director welcomed the gathering. Dr.K.Vasudevan organising secretary briefed about the conference and Dr.V.Parthasarathy organising secretary proposed vote of thanks. Research scientists from England, Malaysia, SriLanka and Bangladesh delivered invited lectures and 25 eminent Scientists from our country delivered lectures and involved in deliberations. Around 108 research papers were taken for the 3 days deliberations. Research scientists, University and college teachers, research scholars and students participated and benefitted. Dr.C.Elanchezhiyan, Dr.M.Muthulingam and Dr.B.Raja Organising secretaries, made an extensive arrangements for the success of the conference, NCD-2017

INVITED LECTURES**II-1****ELEVATED METHYLGLYOXAL CAN INDUCE CARDIAC DYSFUNCTION IN DIABETES MELLITUS
AND GLYOXYLASE GENE TRANSFER CAN REVERSE THIS DIABETIC CARDIOMYOPATHY**¹Jaipaul Singh and ²Keshore R. Bidasee¹School of Forensic and Applied Sciences, University of Central Lancashire, Preston, England, UK and ²Department of Pharmacology and Experimental Neuroscience, University of Nebraska Medical Centre, Omaha, NE 68198, ²Nebraska, USA.

Heart failure is a common pathophysiology in individuals with diabetes mellitus (DM). This defect is attributed to the dysregulation of key excitation-contraction (E-C) coupling proteins arising from post-translational modifications by the di-carbonyl species methylglyoxal (MG). MG is elevated during DM and it increases mitochondrial ROS production which further compromises contractile function. Since MG regulates physiological functions, globally lowering it will precipitate undesired side effects. This study identified a sub-pool of MG which is responsible for causing heart failure in DM. Type 1 DM (T1DM) was induced in

young adult male Sprague-Dawley rats using a single intravenous injection of streptozotocin (STZ) (45 mg/kg in 0.1 ml) in citrate buffer. Control age-matched animals were injected with the buffer alone. The study had ethical clearance from UCLan and UNMC, Omaha to undertake the investigation. After 6-8 weeks of DM, the animals were humanely killed according to Home Office regulation and the heart isolated for the measurement of contraction, calcium transients, immune-histochemistry and gene expression for calcium transporting proteins using established molecular biological techniques. The results show that STZ-induced diabetic rats gained

significantly (Student's unpaired t-test; $p < 0.05$; $n = 18-20$) less body weight (275 ± 15 g) compared to control (415 ± 10 g). Blood/serum glucose, insulin and MGO levels were significantly ($p < 0.05$) elevated (25.6 ± 4.5 mmol; 0.3 ± 0.1 ng/ml; 1.2 ± 0.2 uM, respectively) in diabetic rats compared to control (5.5 ± 1.6 mmol; 0.3 ± 0.0 uM and 0.9 ± 0.2 ng/ml, respectively). In isolated ventricular myocytes, MG induced Ca^{2+} waves and impaired contractile kinetics. Daily i.p. injections (21 days) of MGO to control rats to attain serum levels similar to that in diabetes did not impair cardiac ejection fraction or fractional shortening. Immuno-histochemical analyses of hearts from diabetic animals showed increased expression of the MG-synthesizing enzyme vascular adhesion protein 1 (VAP-1) and the MG adduct, argpyrimidine in microvascular smooth muscle cells (SMC) and myocytes compared to age-matched control.

Overexpression the MG-degrading enzyme glyoxalase-1 (Glo-1) in SMC after the onset of diabetes blunted cardiac function loss, decreased expression of VAP-1 and argpyrimidine in SMC and myocytes and normalized evoked Ca^{2+} transient and contraction kinetics in ventricular myocytes without lowering serum MG levels. These data identified SMC of the microvasculature as a generating source of myocyte-damaging MG in diabetes, and pharmacologically lowering this sub-pool of MG blunts heart failure development. The results have clearly demonstrated that the regulation of MG via the glyoxalase-1 enzyme involving either gene transfer (therapy) method or even by pharmacological intervention may lead to tremendous potential beneficial outcome in the treatment of diabetic cardiomyopathy. The same approach can be used to treat diabetes-induced endothelial dysfunction and diabetic nephropathy.

IL-2

PRODUCTION OF PEPTIDE LIGANDS THAT MODIFY MEMBRANE PROTEIN FUNCTION

Peter N. Monk

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Membrane proteins can have many different functions, but are key mediators between the intracellular and extracellular environments. Using the examples of a seven transmembrane domain protein (complement C5a receptor 2, C5aR2) and a four transmembrane domain protein (tetraspanin CD9), will be discussed the strategies to produce novel peptide ligands that can modify membrane protein function, and how these peptides can be used as therapeutic agents. C5aR2 is an atypical GPCR that couples weakly to G proteins but more strongly to beta-arrestin. It has an ill-defined function, unlike its homologue, C5aR1, which is a conventional GPCR with a strongly pro-inflammatory function in immune cells. Investigations into C5aR2 function have been hampered by the lack of selective ligands with agonist or antagonist activity. Using *in silico* sequence selection, we have identified two

peptides with agonist activity at C5aR2 and no activity at C5aR1. The application of these peptides to the elucidation of a novel signalling pathway in T cell differentiation will be described. Tetraspanin proteins act as adaptors, clustering other membrane proteins into functional domains. CD9 is involved in cellular processes such as membrane fusion (for example in fertilization) and cell adhesion (mediated by proteins such as integrins), and has also been exploited as an attachment site for viruses, bacteria and fungi. Initially using soluble recombinant CD9, we have identified a novel means of inhibiting CD9 function. Using chimeric proteins and synthetic peptides, we have identified short sequences with potent and specific anti-clustering activity. The future development of this approach to disease will be discussed.

IL-3

BODY MASS INDEX, SOCIAL CONDITIONS AND ENVIRONMENTAL EFFECT ON HIGH BLOOD PRESSURE AMONG THE ADOLESCENT SCHOOL CHILDREN

Kanala Kodanda Reddy

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Aim was to assess the prevalence of high blood pressure (BP) and its association with body mass index, social and environmental conditions among the adolescent school children of Tirupati town of Andhra Pradesh, India. Data were collected from schoolchildren aged between 12 to 16 years. The sample consisted of 2258 subjects (1097 boys and 1161 girls). Overweight and obesity were defined by body mass index based on the current method

recommended by the Centre for Disease Control and Prevention 2000. Hypertension was defined as raised BP (average Systolic BP and/or Diastolic BP >95th percentile) for age and sex. Data on social and environmental determinants were collected by using a pre-tested and validated questionnaire. In the present sample pooled hypertension was 9.5 percent (9.0% in males and 9.9% in females). Mean values of

anthropometry and blood pressure showed consistent increase from 12 to 16 yrs ($p < 0.05$). Parental level of education (Father: OR=1.686; 95% CI: 1.115-2.550; Mother: OR=2.366; 95% CI: 1.511-3.706), family income (OR= 2.437; 95% CI: 1.287-4.617), eating behavior of chocolates (OR=1.726; 95% CI: 1.184-2.518) and body mass index (OR=2.474; 95% CI: 1.467-

4.171) were the potential confounders to determine the elevated blood pressure levels in the study sample. Our study reinforces the burgeoning prevalence of high blood pressure among the adolescents. High blood pressure needs to be corrected by advocating interventional measures.

IL-4

THE BURDEN OF CONNEXINS AND ITS IMPLICATIONS IN GENETIC TESTING, EDUCATION AND GENETIC COUNSELLING – CONGENITAL DEAFNESS AS A MODEL

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Hearing loss (HL) is the most common sensory impairment that can be viewed as one of the most important non-communicable disorder. In India, one in every 600 children has HL. About 300–500 genes are necessary for hearing out of the 30,000–50,000 human genes. The key challenge lies in determining which gene is responsible for deafness in a given individual. *GJB2* (Connexin) gene in 13q11-12 locus is considered as the commonest determinant of non-syndromic recessive HL. Direct benefit of genomic technologies to genetic testing for deafness and for comprehensive genetic diagnosis is yet to see the light in India as a standard care. Although many studies are reported from India, a genetic epidemiological approach to understand the distribution of important pathogenic mutations in various geo-ethnic groups from a specific region is lacking. This forms the foremost requirement for both a genetic register and for a prolonged workup. Our work is a first step in that direction. This work will give an overview of congenital deafness as a non-communicable disorder model by presenting different types of cohorts that were tested to

realise the translational approach during the past two decades. This will also highlight the limitations/feasibility in providing genetic services to this special population with loss in both speech and hearing. Molecular diagnostic approach forms the essential methodology. For accurate genetic counselling, it is necessary to establish genetic testing in 'at risk' couples for the common deafness mutations. The identification of sporadics makes the diagnosis all the more challenging. However, we also recognised the need to take up the unresolved and less common genetic cases for a comprehensive screening. Socio-demo genetic and preliminary molecular work related to the common genes has set the tone for implementation of such futuristic larger missions cost effectively. Relevant demographic factors helped us to understand the deaf families in terms of their awareness and plan strategies for their futuristic genetics education. This work will discuss in detail the molecular genetics outcome and other trends observed in the varied approaches relevant to heterogenous cohorts.

IL-5

INVESTIGATING THE POTENTIAL OF BURKHOLDERIA LETHAL FACTOR 1 (BLF1) FOR DEVELOPMENT AS AN IMMUNOTOXIN

Lynda J. Partridge

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Antibodies are increasingly used as biopharmaceuticals to treat cancer. There is currently a great deal of interest in enhancing the activity of these molecules by linking them to drugs (antibody drug conjugates) or toxins (immunotoxins). However, despite a great deal of research spanning many years, to date only diphtheria toxin has been approved for use as an immunotoxin. One problem is that even with antibody targeting, there is a risk of damage to normal cells through inappropriate uptake of toxins. In 2011, researchers in Sheffield reported the discovery of a novel small toxin, Burkholderia Lethal Factor 1 (BLF1), from the bacterium *Burkholderia pseudomallei*, the causative agent

of melioidosis. The toxin is a glutamine deamidase that acts specifically on elongation factor 4A (EIF4A), inhibiting protein synthesis dependent on the RNA helicase activity of this translation initiation factor. Rapidly dividing cells such as cancer cells are particularly dependent on translation involving EIF4A and we have shown that BLF1 shows selectivity towards such cells. Moreover, unlike other toxins proposed for immunotherapy, BLF1 does not bind to a cell surface receptor and so is only active if deliberately introduced into the cytoplasm. These features make BLF1 an attractive candidate for development as an immunotoxin. In the talk, the properties of BLF1 and its potential as a

therapeutic agent will be described. Initial work in which BLF1 has been linked to specific monoclonal antibodies to target cancer cell lines will also be presented.

IL-6

CONGENITAL DISORDERS ASSOCIATED WITH WATER-SOLUBLE VITAMIN TRANSPORT AND METABOLISM

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Water-soluble vitamins (B and C) are essential precursors of coenzymes that play key role in the metabolism. Humans and other mammals are devoid of the ability to synthesize B vitamins (except niacin) *de novo* and must therefore obtain it from exogenous sources through intestinal absorption. Deficiency of any of these vitamins eventually affects all functions dependent on the presence of its coenzyme form and have been reported to be associated with several neurological disorders, cardiovascular disorders and skin defects. The disorders are probably not the result of a single vitamin deficiency but the cumulative manifestation of several vitamin inadequacies of the diet. At the same, optimization of the body homeostatic levels of these vitamins have demonstrated positive consequences on health as it may prevent or delay the development of the various disease progressions. Thus, health and nutritional well-being are dependent upon the maintenance and proper functioning of these vitamin-dependent metabolic pathways. Genetic disorders are heritable, non-communicable diseases caused by abnormalities in a single or multiples genes in a genome.

Globally, at least 7.6 million children are born annually with severe genetic or congenital malformations; 90% of these are born in mid and low income countries. India, like other developing countries, is facing an accelerating demographic switch to non-communicable diseases, where consanguineous marriages are traditional especially in the southern India. Several studies are currently aimed in deciphering the cause of pathogenic mutations among the diseased populations. Such an identification and prevalence of mutations in the affected families among Indian populations may give the awareness about the syndrome and also provide immediate benefit with an efficient and accurate means to perform prenatal diagnosis. Further, it may also help in identifying individuals for more accurate and early diagnosis of the disease and management. Furthermore, it is noteworthy here to mention that supplementation of those vitamin deficiencies and their associated disease symptoms in the patients can be corrected and also documented in several cases that the disease progression was delayed.

IL-7

SYNTHESIS, CHARACTERIZATION AND EVALUATION OF ANTIDIABETIC PROPERTIES OF A NEW ZINC-MIXED LIGAND (METFORMIN-3-HYDROXYFLAVONE) COMPLEX STUDIED IN HIGH FAT DIET FED - LOW DOSE STREPTOZOTOCIN INDUCED EXPERIMENTAL TYPE 2 DIABETES IN RATS.

S. Subramanian

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Earlier, we have synthesized and characterized several organo zinc complexes such as zinc-morin, zinc-diosmin and zinc-silibinin and evaluated their safety as well as antidiabetic properties in experimental diabetes mellitus. In the present study, a new zinc-mixed ligand (metformin-3-hydroxyflavone) was synthesized and characterized by various spectral studies such as FT-IR, Mass, ¹H NMR and ¹³C NMR. The toxicity as well as dosage fixation studies were carried out as per OECD guidelines. The antidiabetic properties of the zinc-mixed ligand complex were evaluated in HFD fed - low dose STZ induced type 2 diabetes in rats. The data obtained through OGTT, HOMA-IR, QUICKI and the evaluation of important biochemical parameters evidenced that the

oral administration of zinc mixed ligand complex significantly ameliorates both the primary and secondary complications of diabetic rats. The assay of pathologically important marker enzymes revealed the non-toxic nature of the zinc-mixed ligand complex. The results obtained were comparable with metformin. The data obtained evidenced that the oral administration of the complex at a concentration of 10mg/kg.b.w./rat/day for 30 days to diabetic rats showed significant antidiabetic and antioxidant properties which was comparable to metformin treatment at a concentration of 50mg/kg.b.w.

IL-8

CHALLENGES OF MANAGEMENT OF HYPERTENSION IN DEVELOPING COUNTRIES

Ratindra Nath Mondal

Indian Society of Hypertension, Department of Medicine, Rangpur Community Medical College, Bangladesh.

Non-communicable diseases are the major challenge to development in the 21st century. Hypertension is one of the most common among non-communicable diseases that cause this high mortality and morbidity. Approximately one-third of the adult population in the South East Asia Region has high blood pressure. Hypertension kills nearly 1.5 million people each year in this region. 71.2% of the hypertensive patients died due to hypertensive related complications (33.3% due to stroke, 20.3% CAD and 17.8% chronic renal failure). Management of hypertension in developing countries is very difficult due to physician crisis, huge patients, lack

of awareness and country specific guideline of hypertension management, high cost of the drug, poor economic condition, illiteracy, wrong belief and perception of the patient (patient believe that antihypertensive drug does not need to take for lifelong period, indigenous herbal treatment). Increase awareness and number of the physicians, implementation of national guideline of management of hypertension, increment of literacy rate, improvements of awareness and socioeconomic conditions, emphasis on motivation, empathetic approach, and lifestyle changes will improve management of hypertension in developing countries.

IL-9

ALCOHOLIC EXTRACT OF *LEEA MACROPHYLLA* ROOTS HELP RESTORE THE DEGENERATED PANCREATIC β -CELLS IN STREPTOZOTOCIN-INDUCED DIABETIC RATJannatul Mawa¹, Md. Atiar Rahman^{1*}, Md. Abul Hashem², Zillur Rahman, Md. Saiful Islam¹Department of Biochemistry and Molecular Biology, University of Chittagong, Chittagong-4331, Bangladesh.²Department of Biochemistry and Biotechnology, University of Science and Technology, Chittagong, Bangladesh.
Department of Pathology, Chittagong Medical College, Bangladesh.

This research investigates how *Leea macrophylla* roots (LMR) repairs the streptozotocin-induced necrosis in type 2 diabetes. Crude ethanol extract of LMR was subjected to an intervention therapy in fructose-feed Streptozotocin-induced Wistar albino diabetic rats. Thirty six seven-weeks old male rats (average body weight 160 ± 8.0) were randomly divided into five different groups namely normal control served with pellet diet and *ad libitum*, diabetic control (DC) and treatment of three doses (LMR50, diabetic LMR100 LMR200 mg/kg bw). Diabetes was induced only in DC & LMR group animals and diabetes was confirmed with nonfasting blood glucose level >200 mg/dL. In a four weeks intervention, oral glucose tolerance test (OGTT) was conducted at the end of the third week and after four weeks, the animals were sacrificed with halothane anesthesia to collect blood and organs (kidney, liver and

pancreas). Diabetes and diabetes-related markers and liver glycogen was estimated by modified method. The extract was found to be non-toxic in acute toxicity test. Food & fluid intake, weekly blood glucose level, ALT, AST, LDH, CK-MB level were significantly ($p < 0.05$) decreased in LM50. Serum TG, total cholesterol, and LDL levels were decreased and HDL level was increased significantly ($P < 0.05$) compared to pioglitazone. The glucose tolerance ability, serum insulin, liver glycogen, relative liver and pancreatic weights were also improved in this group. Histopathological screening showed very prominent recovery of degenerated cells. Insignificant cellular necrosis was noted in all groups. The study demonstrates *L. macrophylla* helps restore degenerated pancreatic tissues and protect non-specific liver and cardiac injury to be considered a leading source of antidiabetic drug design.

IL-10

NANOTECHNOLOGY & NON-COMMUNICABLE DISEASES

T.Theivasanthi

International Research Center, Kalasalingam University, Krishnankoil– 626190, India.

This lecture will discuss about the involvement of nanotechnology in non-communicable diseases particularly diabetes and cancer. Nanotechnology is the latest interdisciplinary technology which produces nanomaterials and provides solutions to the problems

arising in modern day life. Adoption of nanotechnology in medical field will find cure for various diseases. Influences of nanomaterials in applications like sensor, imaging and biomedicine will also be discussed. Health means not only physical well-being of an individual

which indicates both physical and mental health. They are inter-related between them. Physical ill-health leads to mental ill-health / illness and vice-versa. Human basic needs such as food, dress, shelter, living place and surrounding environment are determining the main factors of health. Invention of new machineries and instruments makes our life easier and faster. Such modern lifestyle factors lead to sedentary life which affect / resist our healthy life severely and create non-communicable diseases like diabetes, heart disease, hypertension, psoriasis, cancer etc. Making the environment clean & green and taking the balanced diet will lead to healthy life by avoiding health resistance factors. Recent, innovations such as “World’s first plants materials based superparamagnetic particles” – named “Santhi Particles” and superparamagnetic plants

materials like turmeric (*Curcuma longa*) & coconut shell (*Cocos nucifera*) are useful in cancer hyperthermia which will be discussed. Superparamagnetism improves the accuracy of spintronic sensors which are useful in various biomedical applications. Vegetable powder (*Abelmoschus esculentus*) and *Andrographis paniculata* for diabetes will be discussed. This work also deals with societal impacted innovative research works like nanoparticles for treatment of cancer, diabetes, psoriasis, nanostructured / smart materials for Bio-sensors (like *Amaranthus*), Surface Enhanced Bio-materials, Bio-nanomaterials and Bio-polymers. In addition, “Research Motivation” lecture will be presented to motivate students/ researchers to concentrate more on / towards research.

IL-11

ROLE OF STEM CELL THERAPY IN DIABETES AND ITS COMPLICATIONS

Natesh Prabhu

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Diabetes mellitus, a disorder known for its chronicity and complications, is on the rise globally with India gaining the crown as diabetic capital. While most of the current treatment strategies, aims at normalizing the symptoms, the underlying pathogenesis remains unaddressed. Due to the so called modernized life style, the human body’s regenerative capacity is slowly waned off. This leads to the poor healing which is again compromised in uncontrolled diabetes. With the advent of regenerative medicine and stem cells being one of the golden bullets in the armamentarium of regenerative therapy, the era of “curing” diabetes and its complications are not so far.

Stem cell therapy has been tried on Type 1 DM patients and the improvement in their diabetic status has been published from research done at PGIMER, Chandigarh. The potential targets for stem cell therapy in diabetic complications are non-healing diabetic ulcer, proliferative diabetic retinopathy, macular degeneration and erectile dysfunction. Many ongoing trials have shown positive results and very soon DCGI approved stem cell therapy for diabetic complications will be available for needy patients. This is a potential field for young budding researchers to come up with new scaffolds or grafts for personalized stem cell therapies

IL-12

RIBOSOMAL INACTIVATING PROTEINS (RIP) AND THEIR ANTICANCER ACTIVITY

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Some plants contain molecules that inactivate the ribosomes by inhibiting the protein synthesis through their *N*-glycosidase enzymatic activity which are identified to Ribosomal inactivating proteins (RIPs). RIPs are considered to be plant defense-related proteins as they inhibit the multiplication and growth of several pathogenic virus, fungi, and bacteria. They selectively cleave a specific adenine residue from a highly conserved, surface-exposed, stem-loop (S/R loop) structure in the 28S rRNA of ribosomes. RIPs can be toxic or non toxic and they have received a lot of attention in recent biomedical research because of their unique biological and enzymatic activities towards animal and human cells. A unique ribosomal inactivating protein named annonin was isolated from the seeds of

custard apple (*Annona squamosa*), purified by cation exchange column chromatography and gel filtration column chromatography. Confirmation was done by depurination assay followed by the structural characterization using ESI- MS and MALDI-TOF mass spectrometry. The studies revealed that these RIPs exhibited antimicrobial, antimutagenic and anticancer activity.

IL-13

PUBLIC HEALTH PERSPECTIVE OF NON-COMMUNICABLE DISEASES**Guru Prasad Mohanta**

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There have been increasing burden of non-communicable diseases in recent times due to increased longevity, changes in life style and diet. The trends in urbanization, increased spare income, increased use of tobacco and alcohol contributed to this scenario. Currently India is facing a 'Triple Burden of Diseases': unfinished communicable diseases; emerging non-communicable diseases related to life style; and emerging infectious diseases. Medicines are an essential component of the treatment of many NCDs: cardiovascular diseases, diabetes, chronic obstructive pulmonary disease including asthma, many cancers (including palliative pain treatment) and depression.

Lack of adequate access and high cost of essential NCD medicines and technologies in many countries increases morbidity and mortality and cost of care that forces people and families into poverty due to disability and out-of-pocket expenses. The major burden of NCDs cannot be reduced without equitable and reliable access to essential medicines and technologies. Availability and affordability are the deciding components of access to medicines. In addition to access, it is the adherence to medication what is crucial in successful management of NCDs. "Worldwide more than 50% of all medicines are prescribed, dispensed, or sold inappropriately, while 50% of patients fail to take them correctly".

IL-14

NOVEL LEADS FROM EDIBLE ITEMS FOR NEURODEGENERATION**Musthafa Mohamed Essa^{1*}, Byoung-Joon Song², Thamilarasan Manivasagam³, Arokiasamy Justin-Thenmozhi³, Mohammed Akbar², Gilles J. Guillemin⁴**¹Department of Food Science and Nutrition, Sultan Qaboos University, Muscat, Sultanate of Oman.²Laboratory of Metabolism and Membrane Biochemistry, National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Bethesda, Maryland, USA.³Department of Biochemistry and Biotechnology, Faculty of Science, Annamalai University, Annamalainagar, Tamil Nadu, India.⁴Neuroinflammation Group, Department of Biomedical Research, Faculty of Medicine and Health Sciences, Macquarie University, Sydney, Australia.

The use of natural antioxidants present in the edible items against free radical induced toxic status is an emerging field in the management of neurodegenerative diseases and age related ailments. These natural antioxidants might be able to offer neuro-protective, neurotropic and pro-neurogenic effect to overawe the behaviour impairments which occur during these neurodegenerative conditions like Alzheimer's disease, Huntington's disease, etc. The new scientific insights and

mechanisms on the ability of various antioxidants present in the edible items for the protection of brain during these age-related diseases such as, Alzheimer's, Parkinson's and Huntington's. Here, we highlighted the importance of some specific natural molecules present in edible items in human brain health. To conclude, the natural edible items and their active principles might be able to provide novel therapeutic strategies for these age-related diseases.

IL-15

MICROSATELLITE INSTABILITY AND LOSS OF HETEROZYGOSITY IN ORAL SQUAMOUS CELL CARCINOMA IN MALAYSIAN POPULATION**T.P. Kannan**

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It has been well established that loss of heterozygosity (LOH) and microsatellite instability (MSI) play important roles in oral squamous cell carcinoma (OSCC). Based on their high frequency of alterations in head and neck squamous cell carcinoma and their involvement of von Hippel Lindau (*VHL*) and fragile histidine triad (*FHIT*) proven in many tumour types, five

microsatellite markers located on chromosome 3p, namely, D3S192, D3S966, D3S647, D3S1228 and D3S659 were selected. Fifty archival OSCC tissue samples and their corresponding normal samples were analysed to study the status of LOH and MSI. The study revealed an overall LOH of 56 out of 189 informative cases (29.6%) for the markers selected on 3p with the

marker D3S966, the most frequent, comprising 18/42 (42.8%) of informative cases, suggestive of the presence of putative tumour suppressor genes in these loci. D3S966 showed high frequency of microsatellite instability which was found in 28.6% of informative cases indicating the possibility of mismatch repair (MMR) gene mutations in this region. Three markers D3S966 (71.4%), D3S1228 (56.7%) and D3S192 (41.0%) showed frequent microsatellite alterations (MA).

No significant association was noticed between LOH and gender, tumour stages and differentiation grades. There was, however, a significant association observed between tumour stage ($p = 0.002$) and differentiation grades ($p = 0.035$) with the status of MSI in OSCC in the Malaysian population. A significant association was also noticed between MA and differentiation grades ($p = 0.041$).

IL-16

EFFECTS OF AN EXTRACT OF *MOMORDICA CHARANTIA* AND ITS ISOLATED COMPOUNDS, α , β MOMORCHARIN AND KUGUACIN-J ON VIABILITY, CASPASE ACTIVITY, CYTOCHROME C RELEASE AND ON CYTOSOLIC CALCIUM LEVELS IN DIFFERENT CANCER CELL LINES

Jaipaul Singh

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Cancer is a major global disease where abnormal cells rapidly proliferate and having the ability to migrate to different parts of the human body via a process called metastasis. Cancer is one of the leading causes of deaths worldwide and it is a burden financially and on the quality of human lives in both developed and developing countries, especially as the world's population is increasing. For centuries, extracts from plants were employed successfully for the treatment of cancers throughout the world. This study investigated the effects of water and an alcohol soluble extracts from *M charantia* and its isolated compounds α , β momorcharin and Kuguacin-J on viability, caspase activity, cytochrome c release and on cytosolic calcium levels in different cancer cell lines. Different cancer cell lines including 1321N1, Gos-3, U87-MG, Sk Mel, Corl -23, Weri Rb-1, MCF-7 and MDAMB-123 and their normal healthy counterparts, MCF-10A and L6 muscle cell lines were treated with either the extracts of *M charantia*, α , β momorcharin or Kuguacin-J employing different doses (200 μ M - 800 μ M or 200 μ g - 800 μ g). Initially, both time course and dose -dependent experiments were

carried out followed by combination therapy using ED50 dose for each. The results show that either the extracts of *M charantia*, α , β momorcharin or Kuguacin-J can evoke significant time and dose- dependent ($p < 0.05$; Student's-t-test) decreases in the viability (increases in cell death) of 1321N1, Gos-3, U87-MG, Sk Mel, Corl -23, Weri Rb-1, cMCF-7 and MDAMB-123 cancer cell lines compared to healthy MCF-10A and L6 muscle cell lines and untreated cancer cells. Similarly, either the extract (800 μ g) or α , β momorcharin (800 μ M or) can also evoke significant ($p < 0.05$) increases in caspase-3 and 9 activities, cytochrome-c release and elevation in intracellular free calcium concentrations $[Ca^{2+}]_i$ in the different cancer cell lines compared to untreated cells. Together, the results have demonstrated that either the extracts of *M charantia*, α , β momorcharin or Kuguacin-J can exert their anti-cancer effect on different cancer cell lines by intracellular processes involving an insult to the mitochondria resulting in cellular calcium over- loading, apoptosis, cytochrome release and subsequently, cell death.

IL-17

RECENT SCENARIO OF VERTIGO IN INDIAN POPULATION

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Vertigo is feeling of dizziness or faint or loss of balance of an individual. This problem now emerging along with other non-communicable diseases like diabetes, hypertension and cancer. One study at abroad found that 42% of the population had suffered from vertigo in their life once in a time or several times. But in India exact prevalence is not known and may be around 5 to 8 per 1000. This problem disturbs daily routine activity and make the sufferer worry of falling and getting injury. It

affects the people belongs even fourth or fifth decade and also particularly among female. This problem is commonly occurring in old age also as life expectancy increases. In old age after stroke also the patients develop this issue. The common causes are Meniere's disease, Vestibular neuritis or labyrinthitis, BPPV (benign paroxysmal positional vertigo). Many people ignore this problem and may cause any accident particularly during driving. Treatment may be given as physiotherapy for neck

muscles and drugs like cinnarizine, Betahistine after identification of causes. There are two things would be given as awareness to the patients that this problem even

creates panic but most of the time harmless and second one is the sufferer should be very careful to avoid fall which cause head injury and death.

IL-18

EFFECT OF FOOD QUALITY ON NON COMMUNICABLE DISEASES

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Nutritional security that bridges the Food Security and Good Health is central to many of the Sustainable Development Goals (SDG). Today, we are facing three major health challenges. The first challenge is the threat of food borne diseases and infections e.g. dysentery, typhoid, and diarrhoea. The second challenge is the increasing incidence of non-communicable diseases such as cancer, cardiovascular diseases and diabetes and last but not the least, the health challenge is the triple burden of malnutrition-under nutrition or hunger, micronutrient malnutrition caused by the deficiency of key vitamins and minerals in the diet and over nutrition, resulting in obesity. These problems are not restricted to certain sections of the society; rather they cut across social and economic strata, gender, age and geographical locations. In other words, everybody is affected and many are linked to the food we eat. Furthermore, these diseases are largely preventable by ensuring safe food, good nutrition and healthy eating habits. India suffers from the triple burden of under-nutrition, micronutrient deficiencies and over- nutrition. On one hand, large section of the population does not get sufficient food to eat. According to the Global Hunger Index 2016, India is ranked # 97 out of 118 countries. Moreover, there is widespread micronutrient malnutrition. Over 70% of Indians suffer from at least some form of deficiency of key vitamins and minerals and are unable to meet 50% of the Recommended Dietary Allowance (RDA) of micronutrients. The importance of nutritional security that bridges the Food Security and Good Health which is central to many of the sustainable development goals. It is time to identify various issues pertaining to "malnutrition" and health impacts, including micronutrient deficiencies. The thrust areas pertaining to cultivation of different kind of quality crops, appropriate utilization of traditional knowledge e.g. Ayurveda to improve nutrition, development of methodologies for early detection of malnutrition, utilization of epidemiological data for ascertaining the impact of the investments in the field of nutrition etc. The specific issues could be addressed through appropriate S & T interventions to ensure "Food Security and Nutrition". The quality of foods prevents under nutrition with simultaneous increase in disease related to over nutrition. Grains are high in omega – 6 fatty acids and carbohydrates are low in omega – 3 fatty acids and antioxidants compared to legumes. Fruits, vegetables, nuts and legumes especially green vegetables are

considered for functional foods, poor in energy but are rich sources of antioxidants, magnesium, omega – 3 fatty acids, vitamins and carotenoids. Rapid changes in diets and lifestyles that have occurred with industrialization, urbanization, economic development and market globalization, has accelerated over the past decade. Because of changes in dietary and lifestyle patterns, chronic non-communicable diseases (NCDs) such as obesity, diabetes mellitus, cardiovascular disease and some other types of cancer are becoming increasingly significant causes of disability and premature death. Due to rapid growth of food industry, a variety of foods are now available to consumers which have created new challenges to the food safety namely inadequate implementation of legislation in nutrient food labelling. Food Safety begins with the suppliers of agricultural inputs to farmers and those involved in food production, since materials such as pesticides and veterinary drugs pose different risks and therefore require specific attention. Similarly, irradiations, preservatives and other additives added for improving shelf life, flavor, taste, texture of food products poses new risks. Climate change also has its impact on safety of food. Health behaviour related to population ageing, urbanization, the globalization of trade and marketing, and the resulting progressive increase in unhealthy patterns of diets and eating also appear to be important. A change in the policy aimed at manufacturing only slowly absorbed functional foods to be available at affordable price can increase the consumption of foods. Food Safety and Standards Authority of India (FSSAI), which has been established under the Food Safety Standard Act, 2006, is responsible for food standards, safety and hygiene control. FSSAI has been created for laying down science based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import to ensure availability of safe and wholesome food for human consumption. FSSAI being the regulator has initiated notification of standards under FSS Act 2006 and taken several steps to address these health challenges.

IL-19**A STUDY ON NOVEL ANTICANCER DRUGS A FROM MEDICINAL PLANTS****S. Suja**

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Cancer is one of the most dreaded diseases of the 20th century and spreading further with continuance and increasing incidence in 21st century. It is considered as an adversary of modernization and advanced pattern of socio-cultural life. A greater emphasis has been given towards the researches on complementary and alternative medicine that deals with cancer management. Discovery of anticancer drug has been a major challenge has directed to the attention to the natural product nature serves as a novel source for the development of drugs because of the unique structural diversity. Medicinal plants provide outstanding contribution to modern therapeutics. Phytonutrients are mainly bioactive compounds from plants with general benefits to human health. The WHO has reported that 80% drugs used in developing country rely on traditional medicines. Use of herbal medicine is now gradually becoming the mainstream method of treatment in many countries of the world, because of the improvements in the methods of analysis and quality control of herbs and herbal products along with advances in clinical research. Use of herbal medicines for therapeutic purpose is now well-established and widely acknowledged to be safe and effective. Many drugs commonly used today in the developing countries are of herbal origin and about of all modern prescription drugs contain at least one active ingredient derived from plant material.

IL-20**THE ABCS OF EFFLUX TRANSPORTERS IN MULTIDRUG RESISTANCE MECHANISM****N. Rajendraprasad**

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Multidrug resistance (MDR) to chemotherapeutic agents is a common clinical problem in patients suffering from cancer. MDR is often mediated by overexpression of transmembrane transport proteins belonging to the superfamily of ATP-binding cassette (ABC)-transporters. This protein family includes the classical MDR-associated transporters ABCB1 (MDR1/P-gp), ABCG2 (BCRP) and ABCC1 (MRP1). Inhibition of ABC-transporters by low molecular weight compounds in cancer has been extensively investigated in clinical trials, but the results have still been disappointing. There were 84 genes identified to be involved in cancer drug resistance mechanisms. Tremendous effort and progress has been made over the past few years to understand the mechanisms underlying drug resistance, with the goal to

eventually overcome drug resistance in cancer patients. Targeting ABC drug efflux transporters not only facilitate rational treatment strategies to overcome drug resistance, but will enhance biomarker discovery and the development of companion diagnostics like BH3 profiling to prelude drug response. In this presentation, (i) the ABC-transporters linked with drug-resistance mechanisms and technological approaches leading to overcome clinical MDR, (ii) the method of BH3 profiling to predict tumor sensitivity towards chemotherapeutic drugs and (iii) the role of small molecule inhibitors and plant-derived phytochemicals that targets P-gp (ABCB1) in MDR cell lines will be discussed.

IL-21**NOVEL BIOACTIVE COMPOUNDS TARGETED FOR ANTI-DIABETIC IN C. ELAGANS AND ANTI-INFLAMMATORY RESPONSE IN RAW 264.7 CELL LINES****P. Varalakshmi**Department of Molecular Microbiology, School of Biotechnology,
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Microbial natural products are an important component for using as drugs, as their secondary metabolites have potential anti-diabetes, anti-cancer, anti bacterial, anti-inflammatory activities. In this study, compound VS was purified from the *Lyngbya* sp., a marine cyanobacteria, the structure of which was elucidated as *Sodium 9-amino-4-methoxyundecanoate* using FT-IR, NMR and

LC-MS, and found similar to known lyngbic acid. The anti-oxidant potential of the compound VS was showed better with lower IC₅₀ value (25.89 ± 0.21 µg/ml) than the control ascorbic acid (46 ± 0.8 µg/ml). AGE inhibition activity was examined *in vitro* by BSA-glycation inhibition assay where IC₅₀ value of VS (16.42 ± 0.28 µg/ml) was lesser than phloroglucinol which was

used as a control. The compound VS also showed protective effects against AGE formation *in vivo* in hyperglycemia induced *C. elegans*. Fluorescence activated cell sorting (FACS) also revealed that VS showed anti- down-regulation of COX-2 gene expression

when RAW 264.7 macrophage cell lines were stimulated using LPS for inflammation. Thus the compound VS can be used for the therapeutic application in diabetic and anti inflammatory diseases in near future.

IL-22

TEMPORAL REGULATION OF PROTEOME PROFILE IN THE FRUIT FLY, *DROSOPHILA MELANOGASTER*

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Circadian rhythms of protein synthesis/degradation controlled by the biological clock underlie the rhythmic physiology in the fruit fly, *Drosophila melanogaster*. In the present study, we performed a proteome-wide investigation of rhythmic protein accumulation in *D. melanogaster*. Total protein collected from fly samples at 4 h intervals (00:00, 04:00, 08:00, 12:00, 16:00 and 20:00) over the 24 h period were subjected to two-dimensional gel electrophoresis, and mass spectrometry (MS/MS) analysis. Protein spots/clusters were identified with MASCOT search engine and Swiss-Prot database. Level of expression of proteins was documented as using the Image Master 2D Platinum software. A total of 124 protein spots/clusters were identified using MS/MS analysis. Significant variation in the expression of 88 proteins over the 24-h period was observed. A relatively

higher number of proteins were upregulated during the night compared to the daytime. The complexity of temporal regulation of the *D. melanogaster* proteome was further reflected from functional annotations of the differently expressed proteins, with those that were upregulated at night being restricted to the heat shock proteins and proteins involved in metabolism, muscle activity, proteinsynthesis/folding/degradation and apoptosis, whilst those that were overexpressed in the daytime were apparently involved in metabolism, muscle activity, ion-channel/cellular transport, protein synthesis/folding/degradation, redox homeostasis, development and transcription. Our data suggests that a wide range of proteins involved in vital metabolic pathways synthesized by the fruit fly, *D. melanogaster*, is under the regulation of the biological clock.

IL-23

CANCER TESTIS ANTIGENS: A POTENTIAL TUMOR THERAPEUTIC TARGETS.

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Cancer testis antigens are expressed in the germ cells of testis and fetal ovary and are immunogenic proteins with a restricted expression pattern in normal tissues and aberrant expression in different types of tumors. Due to their restricted expression pattern and immunogenicity, they have emerged as a potential targets for developing novel clinical biomarkers and immunotherapy for various malignancies. One such cancer testis antigen acrosin binding protein (ACRBP) expressed in normal testis and over expressed in many cancers such as melanoma, breast cancer, bladder cancer, prostate cancer, esophageal squamous cell carcinoma and hepatocellular carcinoma. A computational approach was employed to predict suitable ACRBP targeting multiple epitopes for immunotherapeutic approach. We then performed in-depth computational analysis to evaluate the predicted epitopes immunogenicity, conservation, population coverage and toxicity. Further molecular

docking studies was carried out to determine the binding affinity of epitopes to the common HLA molecules. The T cell and B cell epitopes identified in the study are promising targets for ACRBP and they may induce immune response and pave a promising pathway to design a therapeutic vaccine.

IL-24**DEVELOPMENT AND CLINICAL EVALUATION OF DENDRITIC CELL VACCINES FOR HPV INDUCED CERVICAL CANCER****R. Priya**

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Cervical cancer is a leading cause of mortality among women in countries like India. Human Papilloma virus is linked to >99% of cervical cancer cases as are other immune perturbations such as down regulation of class 1 MHC molecules in the tumour cells; induction of tolerance through priming by immature dendritic cells (DC); secretion of inhibitory cytokines such as IL10 by either the tumour cells or the stromal elements. That immune response can play a role in the clearance of tumours has been shown in animal models and in some immunogenic tumours such as melanomas and renal cell carcinomas. The presence of HPV provides a scope for

using viral peptide based immunotherapy. Dendritic cells are the most potent antigen presenting cells with ample HLA and co-stimulatory molecules. Hence we primed autologous monocyte derived dendritic cells with patients' own cervical tumor antigens to evaluate their phenotypic and functional characteristics. Our Phase I study showed grade 0 or grade 1 toxicity. One patient (of 5) showed complete regression of metastatic lung lesion post vaccination with tumor lysate pulsed DCs and cisplatin based chemotherapy. Our Phase II studies are ongoing. So far 15 patients have been recruited and 8 patients have received 5 or more doses of the vaccine.

IL-25**TARGETING THE METASTATIC CASCADE USING PEPINO AND ITS POTENTIAL APPLICATION IN TREATING TUMOUR BY MODULATING INFLAMMATORY MEDIATORS AND TRANSCRIPTION FACTORS.****C. Guruvayoorappan**

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Metastasis is one of the hallmarks of malignant neoplasm or cancer which is the leading cause of death in many cancer patients. A major challenge in cancer treatment is to find better ways to specifically target tumour metastasis. In this study the anti-metastatic potential of the methanol extract of Pepino (*Solanum muricatum*) was evaluated using the B16F-10 melanoma induced lung metastasis in C57BL/6 mice. Two groups of mice (14 animals/group) were subjected to metastatic induction using B16F-10 cells. One group of animals was treated with *S. muricatum* methanolic extract via intraperitoneal injection for 10 consecutive days. Blood was collected and the lungs were subjected for morphological, biochemical and histopathological analysis. *S. muricatum* treatment significantly ($p < 0.01$) inhibited the lung tumour nodule formation and reduced the lung collagen hydroxyproline, hexosamine, and

uronic acid levels. Similarly serum sialic acid and γ -glutamyl transpeptidase levels were also significantly inhibited after *S. muricatum* treatment. The levels of proinflammatory cytokines such as Tumour necrosis factor (TNF)- α , Interleukin (IL)-1 β , IL-6, Granulocyte monocyte colony stimulating factor (GM-CSF), IL-2 in the serum of these animals were significantly altered after *S. muricatum* treatment. The serum nitric oxide level was also found to be significantly decreased after *S. muricatum* treatment. This decreased nitric oxide level after *S. muricatum* treatment was also accompanied by decreased inducible Nitric Oxide Synthase (iNOS) and Cyclooxygenase (COX)-2 expression. The study reveals that *S. muricatum* treatment could alter the proinflammatory cytokine production and could inhibit the activation and nuclear translocation of p65 and p50 subunits of nuclear factor-kappa B in B16F-10 cells.

IL-26**GRAMINE INHIBITS ANGIOGENESIS AND INDUCES APOPTOSIS VIA MODULATION OF TGF- β SIGNALING IN 7,12 DIMETHYLBENZ[A]ANTHRACENE (DMBA) INDUCED HAMSTER BUCCAL POUCH CARCINOMA.****K. Suresh^{a*}, R. Arunkumar^a**

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Transforming growth factor- β (TGF- β) and its receptors are considered as a novel target in cancer chemotherapy.

Gramine, an indole alkaloid, possesses various pharmacological properties including antiproliferative

and anticancer. However, the anti-angiogenic property remains unexplored. The present study was designed to evaluate the anti-angiogenic and apoptosis induction properties of gramine through inhibiting TGF- β on DMBA induced oral squamous cell carcinoma (OSCC) in the hamster buccal pouch (HBP). The effects of gramine on TGF- β signaling in DMBA induced carcinogenic events such as angiogenesis and apoptosis were analysed by studying the mRNA expression using RT-PCR, protein expression by western blot and histopathological analysis using hematoxylin and eosin (H & E) staining. Gramine significantly inhibited phosphorylation and nuclear translocation of Smad2 and

Smad4 by blocking activity of the TGF β -RII, RI and activation of inhibitory Smad7. Gramine inhibited angiogenic markers such as MMP-2, MMP-9, HIF-1 α , VEGF, and VEGF-R2 as well as increased TIMP-2 expression. Furthermore, gramine induced apoptosis in DMBA induced tumor bearing animals by up regulating the pro apoptotic proteins Bax, cytochrome C, apaf-1, caspase-9 caspase-3 and PARP. In this study, we clearly demonstrated that gramine treatment diminishes angiogenesis and induces apoptosis in hamster buccal pouch (HBP) carcinogenesis by modulating TGF- β signals.

IL-27

THERAPEUTIC ATTENUATION OF NEUROINFLAMMATION AND APOPTOSIS BY BLACK TEA THEAFLAVIN IN CHRONIC MPTP/PROBENECID MODEL OF PARKINSON'S DISEASE

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Neuroinflammation and apoptosis in the dopaminergic neurons of substantia nigra play an important role in the pathogenesis of experimental and clinical Parkinson's disease (PD). This study focused on the possible anti-inflammatory and anti-apoptotic effects of theaflavin (TF), a black tea polyphenol against 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)-induced neurotoxicity in mice. C57BL/6 male mice were treated with 10 doses of MPTP (25 mg/kg, s.c.) and probenecid (250 mg/kg, i.p.) for 3.5 days interval. TF (10 mg/kg) was administered 1 h prior to the administration of MPTP for 35 days of experimental period. MPTP/p

treatment upregulates the release of interleukin-1 β , IL-6, tumor necrosis factor- α , IL-10, glial fibrillary acidic protein and Bax, and downregulates anti-apoptotic marker Bcl-2. Oral treatment of black tea polyphenol TF significantly attenuates MPTP induced neuroinflammation as well as apoptosis. Behavioral studies (catalepsy and akinesia) were carried out to confirm these molecular studies. The results demonstrate that TF mediated its neuroprotection against chronic MPTP induced toxicity through the involvement of multiple molecular events. It was concluded that TF may provide a precious therapeutic.

IL-28

CURRENT DEVELOPMENTS AND FUTURE CHALLENGES IN UNDERSTANDING DEMENTIA

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Dementia is age-related non-communicable disease characterized by neuropathological changes leading to impaired cognitive function that is not a part of normal ageing process. This is a growing public health concern as aging population is rapidly increasing worldwide. More than half of dementias are undiagnosed or unrecognised with no cure or effective preventive treatment. Most common type of dementia is Alzheimer's disease, followed by other types such as vascular and Lewy body dementia. Cholinergic, Amyloid, Tau are the major pathways that are targeted for therapeutic development. Further, progress in imaging, molecular biomarkers are providing some insight on pathogenesis of dementia, which could eventually help to improve diagnosis. Genetic predisposition plays an important role in disease risk, progression, and symptomatic therapy, however insight

into the genetics is incomplete and lacking clinical utility. Regulatory polymorphisms that affect gene transcription and mRNA processing/translation are likely to contribute to disease risk and treatment outcome, but remain largely unknown. We focus on the discovery of novel regulatory genetic variants and their predicted impact on neuronal biology and behavioural outcomes in order to develop individualized therapy predicting response to antipsychotics. We have identified several key genes differentially expressed and also identified transcripts with altered allelic expression, an indicator of regulatory variants. These findings shed light on the potential modification in neuronal mechanisms, with potential to develop pharmacogenomic intervention in therapy.

IL-29**ROLE OF PLANT POLYPHENOLS IN ALZHEIMER'S DISEASE****A. Justin Thenmozhi**

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Alzheimer's disease (AD) is the most common neurodegenerative disease, characterized by notable memory loss, cognitive impairment and personality disorders accompanied with structural abnormalities in the brain of aged population. Currently approved drugs for AD offer symptomatic relief without preventing the progression of the disease and having limited efficacy. Many experiments and clinical trials have shown that the traditional herbal medicine having multiple targets could provide effective treatment of AD. Increasing evidence suggests that the plant derived polyphenols plays a key role in improving cognitive functions and preventing/delaying the onset of certain

neurodegenerative diseases including AD. Although several biological effects based on experimental studies could be scientifically explained, the way to bring natural polyphenols into routine clinical application against neurodegeneration seems to be long, because of its low average daily intake, poor availability and few adverse effects. So the better knowledge about intestinal absorption, excretion, intestinal and hepatic metabolism, plasma kinetics, the nature of circulating metabolites, transport, cellular uptake, intracellular metabolism, and accumulation in tissues including brain will facilitate current scientific understanding and offer great hope for the prevention of AD.

IL-30**MARINE ACTINOBACTERIA - TREASURE HOUSE FOR NOVEL ANTICANCER MOLECULES****M. Radhakrishnan**

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Cancer is an appalling ailment which is characterized by irregular propagation of the cells. As a cell progresses from the normal to cancerous, so the biological essential to survive and perpetuate derives fundamental changes in cells behavior. Since times immemorial microbial metabolites especially those which are from actinobacteria are the most imperative as cancer chemotherapeutic agents. Actinobacteria are the promising producer of various high value metabolites and two third of the antibiotics available in the commercial market are from this group of bacteria. Actinobacteria are ubiquitous in the marine environment, playing an important ecological role in the recycling of refractory biomaterials and producing novel natural products with pharmaceutical applications. Among the different microbial phyla in marine ecosystems, actinobacteria produced the major fraction of natural products with activities including antibacterial, antifungal, antiparasitic, antimalarial, anti-inflammatory and anticancer activities. Salinosporamide A was isolated from the crude extract of a *Salinospora* strain CNB-392. It showed potent anti-tumor activity with an IC₅₀ value of 11 ng/mL in HCT-116 cells. It also exerted a mean GI₅₀ value of less than 10 nM in the NCI's 60 cell line-panel. Among these cell lines, Salinosporamide A showed the greatest potent efficacies in NCI-H226, SF-539, SK-MEL-28 and MDA-MB-435 cells. Salinosporamide A inhibited the purified 20S proteasome with IC₅₀ value of 1.3 nM. It was about 35-

fold more potent than the first discovered specific proteasome inhibitor, omuralide. In recent years, the rate of chance for getting novel anticancer metabolite is higher when searching marine organism associated actinobacteria. Actinobacterial associates of marine invertebrates have proven to be a rich source of biologically active substances with antimicrobial, cytotoxic, or antineoplastic activities that can be useful for biotechnological and pharmaceutical application. This was proved in case of sponge associated actinobacteria from which many novel bioactive metabolites are reported. Current status of research on marine actinobacteria in India with special reference to anticancer metabolites will be discussed.

IL-31

HYPERTROPHIC CARDIOMYOPATHIES – “INSP₃R-ING” ROLE AND TARGETS

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In heart, Inositol 1,4,5-triphosphate receptor-type 2 (InsP₃R2) is a ligand-gated Ca²⁺ channel predominantly expressed and localized in the nuclear membrane. InsP₃R2 mediated bi-directional Ca²⁺ mobilization regulates diverse cellular processes including arrhythmias and nuclear signaling in the heart. Cardiac specific deletion of InsP₃R2 is cardio protective and not susceptible to endothelin-1 induced arrhythmia. Activated Ca²⁺-calmodulin kinase II δ (CaMKII δ) and calcineurin-Nuclear Factor Activated in T cells (NFATc), the two major signaling pathways are the leading causes of a diverse pathophysiology of the heart. The multifunctional CaMKII δ and calcineurin are effectors of Ca²⁺ and calmodulin and activation of these two pathways are primarily depends on InsP₃R2 mediated Ca²⁺ mobilization in the heart and not by beat-to-beat Ca²⁺ fluctuations during excitation-contraction coupling (ECC). The activated CaMKII δ modulates a diverse targets including InsP₃R2 in a negative feedback and increases nuclear Ca²⁺ to activate hypertrophic gene expression. We hypothesized that intervention of InsP₃R2 Ca²⁺ channel activity would be a novel therapeutics against cardiac remodeling and demonstrated with two different approaches, competitive

inhibition and blocking inhibition. In competitive inhibition, when the InsP₃R2 specific peptide (around CaMKII δ target site) is introduced into the cells, acts as sponge and trap the CaMKII δ molecules and inhibit CaMKII δ signaling pathway followed by cellular hypertrophy. In blocking inhibition the InsP₃R2 specific antibody (polyclonal; targeting the CaMKII δ binding site) binds to InsP₃R2 and inhibits its Ca²⁺ channel and the activation of CaMKII δ pathway which leads to the inhibition of cellular hypertrophy. Our data show that, both the peptide and the antibody were efficiently transfected and inhibited cellular hypertrophy in rat neonatal cardiomyocytes compared to the control peptide and antibody respectively. Inhibition of cellular hypertrophy was evidenced by preserved cell surface area and inhibition of hypertrophy specific gene expression including ITPR2 (InsP₃R2 gene). In conclusion our data demonstrate that, the InsP₃R2 specific peptide and the antibody inhibit cellular hypertrophy *in-vitro*. We further evaluate using different heart targeting recombinant peptides and scFv (single chain) antibodies in adult cardiomyocytes and rabbit models.

IL-32

NUTRACEUTICALS FOR NULLIFYING CANCER

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The term Nutraceutical which is a portmanteau of “Nutrition” and “Pharmaceutical” was evolved due to a recognition link formed between nutrition and health. Nutraceuticals are medicinal foods that serve as a powerful instrument for immune modulation and act against acute and chronic diseases. The origin of cancer is often a slow process and the risk of developing cancer increases with age. Current treatment for cancer includes chemotherapy, radiotherapy, and biologically based therapies which results in unintended side effects compromising the maintenance of health and nutritional well-being. A modified diet that includes consumption of beneficial nutraceuticals can greatly influence the balance and availability of dietary chemopreventive agents. Nutraceuticals, mostly phytochemicals derived from medicinal plants have better edge over chemical and synthetic medicinal agents as they deliver beneficial effects without any side effects thereby promoting optimal health, longevity, and quality of life. They can

be considered as cost effective promising agents in clinical therapy as they have the potential to prevent a number of chronic diseases without any side effects. Several epidemiologic and animal model studies have reported the immune-modulatory and chemopreventive effects of nutraceuticals. Hence nutraceuticals can rightly be considered as need of the hour in the battle against cancer.

IL-33**STOCHASTIC MODELLING FOR THE POST-OPERATIVE COUGH IN CARDIAC SURGERY PATIENTS****K. Senthamarai Kannan**

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Stochastic model is one of the most important models for identifying and preventing the public health problem based on the historical data sets. It is an appropriate way of determine the progress of one state to another state, which can help to better perceptive of disease status. The applications of stochastic process which include Markov process where dynamic behavior is such that probability distributions for its future developed depends only on its present state and not how the process arrived in that

state. The main objective of this paper is to understand the causes and incidence on non-infective post-operative cough through the Markov chain. It is an appropriate way of analyzing the prognosis of cough in post-operative days when the outcomes are dependent. This model is an appropriate way of determine the progress of one state to another state, which can help to better perceptive of disease prevention.

IL-34**FOOD AND DIABETES MELLITUS****S. Sethupathy**

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In view of the cardiovascular complications in diabetes mellitus, appropriate dietary measures play a crucial role in its prevention. High carbohydrate diet induces hyperinsulinemia, postprandial hyperglycemia and post prandial hypertriglyceridemia which increase the risk for CVD. But there is lack of standardized definition for high carbohydrate diet. If 50% of energy is from carbohydrates, it is considered to be high carbohydrate diet and lesser than 50% is lower carbohydrate diet. McDougall *et al* (2014) has observed that subjects on high carbohydrate, low fat (carb:fat:protein – 81% :7% :12%), high fiber, plant based ad libitum diet for seven days caused reduction in body weight and improved metabolic profiles. Increased risk for CVD can be attributed to the combination of genetic factors and adoption of a 'Westernized' lifestyle, including new dietary practices in place of previous traditional practices coupled with reductions in physical activity. Postprandial

hyperglycaemia has been considered as an independent risk factor for cardiovascular disease (CVD) in type 2 diabetes. Postprandial hyperglycaemia produces oxidative stress, which, in turn, induces endothelial dysfunction and inflammation. Attempts made to achieve aggressive HbA1c goals (<6.5%) are associated with a three-fold increase in the risk of hypoglycemia, counterbalancing the benefits conferred by intensive glucose control. Repeated episodes of hypoglycemia result in significant morbidity and mortality which is reportedly associated with a six-fold increase in death. At present, there is an urgent need for appropriate dietary pattern which should not cause postprandial hyperglycemia and hypoglycemic episodes. Hence modification of diet incorporating local food habits can help in good control of diabetes with greater of degree of adherence.

IL-35**CANCER IMMUNOLOGY AND ANTICANCER PROPERTIES OF GREEN TEA****T. S. Saravanan,**

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In modern days, cancers have contributed more to our understanding of immunology than immunology has contributed to our understanding of cancer. Almost everything that is known about the chemistry of the antibody molecule has been obtained by studying the massive amounts of antibody that are produced by tumors of antibody forming cells (Plasma cells) in man and the mouse. Cancer immunology is the study of

interactions between the immune system and cancer cells (also called tumors or malignancies). It is also a growing field of research that aims to discover innovative cancer immunotherapies to treat and retard progression of this disease. The immune response, including the recognition of cancer-specific antigens is of particular interest in this field as knowledge gained drives the development of new vaccines and antibody therapies. For instance in

2007, Ohtani published a paper finding tumour infiltrating lymphocytes to be quite significant in human colorectal cancer. The host was given a better chance at survival if the cancer tissue showed infiltration of inflammatory cells, in particular lymphocytic reactions. The results yielded suggest some extent of anti-tumour immunity is present in colorectal cancers in humans. Over the past 10 years there has been notable progress and an accumulation of scientific evidence for the concept of cancer immunosurveillance and immunoediting based on (i) protection against development of spontaneous and chemically-induced tumors in animal systems and (ii) identification of targets for immune recognition of human cancer. There are four

primary polyphenols in green tea and they are often collectively referred to as Catechins. As powerful antioxidants, catechins have been shown in recent studies to fight viruses, slow aging, antiproliferative effect on cancer cells and also have other beneficial effect on health. Clinical tests have shown that catechins destroy free radicals and have far-reaching positive effects on the entire body. The free radicals are highly reactive molecules that can damage the body at the cellular level leaving the body susceptible to cancer, heart disease and many other degenerative diseases. Recent research findings suggest that green tea confers protective effects against many cancers (Mepur et al. 2005 & Gupta et al. 2008).

IL-36

SALIVARY C-ERBB-2 LEVELS IN PATIENTS WITH DIFFERENT STAGES OF BREAST CANCERS

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Human Epidermal Growth Factor Receptor-2 (c-erbB-2) is a biomarker that can be detected in saliva of breast cancer patients. An elevated level of this protein indicates the presence of an aggressive tumour with poor prognosis. The aim of our study was to determine the levels of Salivary c-erbB-2 in patients diagnosed with different stages of breast cancer. 90 patients, histopathologically diagnosed with breast cancer were divided into three groups based on TNM staging (Stage I, II, and III) with 30 patients in each group. 3 ml of unstimulated saliva was collected from these patients and

the protein was estimated using ELISA kit. Appropriate statistical tests were used to analyze the demographic details and mean Salivary c-erbB-2 levels. The mean Salivary c-erbB-2 levels in groups I, II and III were 9.933(\pm 5.105), 59.633(\pm 17.14) and 146.695(\pm 22.418) picograms /ml respectively. There was a significant difference in the levels of the protein among the three groups ($p < 0.001$). The present study showed an increase in Salivary c-erbB-2 levels with an increase in the TNM staging in patients with breast cancer.

IL-37

BASIC CARE, HANDLING AND MANAGEMENT OF EXPERIMENTAL ANIMALS

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The presentation mainly focuses on the basic care on healthy lab animals and handling procedures of laboratory animals (mice, rats, hamsters, guinea pigs and rabbits), Proper experimental animal management is the first step towards use of animals in research, as repeated handling of animals during regular care taking of experimental animals cannot be avoided, and there is always chance of mistakes. Either inadvertently the animal might be placed in a wrong cage or false entry put on the label. Cage tags should always be filled up properly, never missing strain name, parentage, date of birth, and generation. During regular handling of one cage at a time should be managed at a time. For ease of identification and in order to prevent an inadvertent mix-up, cage tags should have a strain-specific colour code. Environment, temperature, cage, food and water, relative humidity, air quality, light, sound, and nutrition are

important factors to the quality of experimental animal rooms, which will be discussed.

IL-38

CLINICAL IMPLICATIONS OF TYPE 2 DIABETES MELLITUS ON FIXED PROSTHODONTICS TREATMENT.

Leoney Antony

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Fixed prosthodontics treatment is a vital tool in the rehabilitation of missing and damaged tooth. This modality of treatment depends on the healthy condition of the supporting teeth and alveolar bone. The prognosis of the fixed prosthodontic treatment is much affected by systemic conditions namely type 2 diabetes mellitus as this condition in its uncontrolled state could lead to periodontitis as well as bone loss. The immunity of the individual is highly impaired to counteract infections in type 2 diabetes mellitus. The matrix producing cells are

decreased which result in reduced healing capacity of the oral tissues which lead to microvascular complications. The increase in advanced glycation end products in type 2 diabetes mellitus results in macrovascular complications. This metabolic derangement results in damage to perio-oral tissues which complicates fixed treatment options as well as their prognosis. This presentation will highlight the clinical implications of 2 Diabetes mellitus on fixed prosthodontics treatment.

ORAL PRESENTATIONS**OP-1****EVALUATION OF NUTRITIONAL VALUE AND *IN-VITRO* ANTIDIABETIC POTENTIAL OF ANTIHYPERGLYCEMIC HERBAL BISCUITS**

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Hyperglycemia is a pathological condition associated with prediabetes and diabetes. The incidence of prediabetes and diabetes is increasing and imposes great burden on health care worldwide. The eating habits and patterns of the diabetic patients are the main causes for poor glycemic control. Bakery products such as biscuits are consumed by people of all the age groups. The present study was designed with an aim to develop herbal biscuits with antidiabetic properties that can curb the hunger needs of the diabetic individuals as well as help in alleviating the complications associated with diabetes. The poly herbal biscuits were prepared using different ratio of the medicinal plants such as *Cinnamomum*, *Glycyrrhiza glabra*, *Gymnema sylvestre*,

Syzygium cumini, *Murraya koenigii* and *Phyllanthus emblica*. The nutritional value and major phytochemicals were estimated in the biscuits. The *in-vitro* anti-diabetic activity was studied for the formulated polyherbal biscuits. The formulated biscuits showed significant alpha amylase inhibitory activity and at higher concentration of the sample greater inhibition of amylase activity was observed. Since there are a lot of food restrictions for diabetics, these herbal biscuits may serve as good snacking agents with added therapeutic benefits. The prepared biscuits are found to have good nutritional value with health augmenting properties. Further studies are required to assess other parameters of the biscuits such as shelf life and storage conditions.

OP-2**HYPOGLYCEMIC ACTIVITY OF DIANOVA (POWDER OF HERBAL FORMULATION) IN ALLOXAN – INDUCED DIABETIC RATS**S. Anpuchelvi¹ and G. Sritharan²Unit of Siddha Medicine, University of Jaffna. Sri Lanka,
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Dianova, a poly herbal powder (churnam) formulation was used to study in the blood glucose on diabetes mellitus. It consists of six herbs such as *Gymnema sylvestre*, *Eugenia jambolana*, *Salasia riticulata*, *Curcuma longa*, *Terminalia chebula* and *Phyllanthus emblica*. Experimental diabetes was induced in rats by injecting alloxan monohydrate intraperitoneally at a dose

of 120mg/kg body weight in ice cold citrate buffer ph - 4.5. After 72 hours, the blood was collected from the tail vein of rats and blood glucose levels were determined. Rats with blood sugar level of 200 – 350 mg/dl were considered as diabetes. The mortality rate of the rat after treatment was found to be 25%. The rats were randomly divided into 4 groups of 10 animals each. Only male

animals were selected for this study. Group 1: These animals several as untreated control. Group 2: These animals were given alloxan and the fasting blood sugar level was checked on days 1, 3, 5, 7, 9, 11, 13 & 15 in the morning. Group 3: These animals were given alloxan and compound of interest, the dose was given around 12mg/ animal and the fasting blood sugar levels were checked as above days. Group4: These animals were given alloxan and the compound of interest and compound of standard drug i.e. metformin + Glibenclamide was given as 12 mg/ animal and the fasting blood sugar level was checked on days 1, 3, 5, 7, 9, 11, 13 & 15 in the morning. All the animals were given normal food and water. The aim of the present

study was to investigate the antihyperglycaemic activity of dianova powder. The restoration of blood sugar level to normalcy in the rats fed with the Dianova states that the metabolic dysfunction which was brought about by alloxan was reverted back to absolute normalcy and perse this emphatically proves that pancreatic function disrupted due to alloxan return back to very normal level with appreciable production of insulin secretion. The improvements were noted emphatically very similar in the groups 3 and 4, Dianova churnum showed effective hypoglycemic activity when compared with the control groups (86+/- 2.1 and 85+/- 1.3 mg/ml, P<0.05 respectively). This experimental study of Dianova shows a statistically significant oral antihyperglycemic effect.

OP-3

GTF-231, A MIXTURE OF GYMNEMIC ACID, TRIGONELLINE AND FERULIC ACID AMELIORATES OXIDATIVE STRESS IN HFD FED- LOW DOSE STZ INDUCED TYPE 2 DIABETES IN RATS

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Oxidative stress is a pathophysiological process wherein the generation of reactive oxygen/nitrogen species (ROS/RNS) overwhelms the cells inherent antioxidant defenses, damaging vital cellular macromolecules including lipids, proteins, nucleic acids, membrane bound polyunsaturated fatty acids and play a significant role in the impairment of cellular architecture and metabolic dysfunctions. Experimental and clinical data demonstrated that chronic hyperglycemia-induced oxidative stress mainly contributes to the development and progression of diabetes and its secondary complications as ROS are generated predominantly through the oxidation of glucose. Additionally, the pancreatic β -cells due to the feeble intrinsic antioxidant availability succumb to the excessive ROS that behaves in a sporadic and destructive manner. According to a report by the US National Health and Nutrition Examination Survey, nearly 60 % of patients with diabetes have more than one complication caused by chronic diabetes. T2DM is a multifactorial metabolic disorder accounts for more than 95% of diabetics and

usually needs multi-targeted therapeutic interventions. It arises due to insufficient insulin secretion or its action or both. In the present study, an effort has been made to evaluate the antioxidant potential of the GTF-231 (Gymnemic acid, Trigonelline and Ferulic acid in the ratio of 2:3:1) in type 2 diabetes in rats. T2DM was induced in experimental rats by HFD fed and low dose STZ (35 mg/kg.b.w.) administration. The biochemical parameters analysed include FBG, HbA1c, plasma insulin, HOMA-IR, HOMA- β cell function, AGEs, AOPPs, hydroperoxides, MDA, enzymatic as well as non-enzymatic antioxidants, proinflammatory cytokines such as TNF- α , IL-1 β , IL-6, NF- κ B and NO. Histological observations were made on the pancreatic tissues. The data obtained evidenced the significant antioxidant properties of the GTF, which was further evidenced from the histological observations made on the pancreatic tissue. The observed antioxidant potential of GTF-231 may account for its significant antidiabetic properties.

OP-4

AN OBSERVATIONAL STUDY OF DRUG UTILISATION PATTERN AND PHARMACOVIGILANCE OF ANTIPSYCHOTICS

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Drug Utilization Research (DUR) was defined by "The marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic implications". The facilitation of rational use of drugs i.e the prescription of a well documented drug together with correct information at an

affordable cost is the main aim of conducting this study. Psychiatric disorders form an important public health priority among which psychotic disorders are the chief contributors to disability adjusted life years [DALYs] and are associated with high levels of health service utilization and treatment cost. Without the knowledge of

how drugs are being prescribed and used it is difficult to initiate a discussion on rational drug use or to suggest measures to improve prescribing patterns. After getting approval from the institutional human ethics committee and consent from the patients, a total of 79 prescriptions containing atleast one antipsychotic drug was collected in one year period. The patients were given a one month follow up and the adverse effects, which arise out of therapy are noted and analysed. Out of the 79 participants, 59.49% were males and 40.51% were females. Regarding the morbidity distribution, Schizophrenia contributes to 50.63% and bipolar disorder contributes to 29.11% of diagnosis. Based on the analysis by WHO/INRUD standard guidelines, the

average number of drugs and antipsychotics per prescription were 3.32 and 1.38 respectively. The utilisation of antipsychotic drugs assessed by PDD/DDD ratio is equal to one for haloperidol and aripiprazole while it is less than one for other antipsychotic drugs. The adverse effects commonly encountered while treating psychotic cases are sedation, extra pyramidal symptoms, weight gain and anticholinergic side effects like constipation and urinary retention. The antipsychotic drugs haloperidol and aripiprazole are utilised appropriately while there is under utilisation of other antipsychotics. The volume of use of haloperidol, olanzapine and benzodiazepines should be judicious considering their adverse effects.

OP-5

TARGETING CANCER MARKER PROTEIN-A NEW STRATEGY FOR EFFECTIVE CANCER THERAPY

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Cancer is an uncontrolled over proliferation of abnormal cells anywhere in a body. Cancer may occur due to heredity, exposure to toxic chemical, ionizing radiation and pathogens. The main types of cancer are namely, carcinoma, sarcoma, leukemia, and lymphoma. The three most common cancers are highly prevalent for men are prostate, lung, and colorectal. For women the breast, lung and colorectal cancers are becoming common. The leukemia, brain tumors, and lymphoma are affecting children. The World Health Organization (WHO) reported that the cancer is a leading cause of deaths in the world. Among the various types of cancers, the lung, stomach, liver, colon, and breast cancers cause the most deaths in each year and accounted for 8.2 million deaths

worldwide. It is expected that this figure would increase to 13.1 million in 2030. The signs and symptoms of cancer are varying from cancer to cancer but sharing the common symptoms such as fatigue, weight loss, pain, changes in the skin, altered functions of bowel or bladder, unusual bleeding, persistent cough or voice change, fever, lumps, or tissue masses. The existing drugs for the treatment of cancer are associated with serious adverse reactions especially affecting normal cells in addition to the cancer cells due to their non specific binding of drugs. Hence, targeting of cancer marker protein will provide an effective cancer therapy with reduced or no adverse effects.

OP-6

HYPOLIPIDEMIC EFFECT OF 'MATHUMEHA CHOORANAM' IN PATIENTS WITH TYPE II DIABETES MELLITUS

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Diabetes mellitus a chronic metabolic disorder arises due to defect in the insulin secretion with / without varying degree of insulin resistance. Mathumeha chooranam is widely used in Siddha Hospitals and Dispensaries of North and Eastern Provinces of Srilanka for the treatment of diabetes mellitus. It contains *Terminalia chebula*, *Phyllanthus embelica*, *Murrya keonigii*, and *Gymnema sylvestriae*. The objective of this study was to determine the hypolipidemic effect of MMC in patients with type II diabetes mellitus. About 168 subjects of age range between 40 - 70 years with fasting plasma glucose (FPG) between 140-300mg/dl were included in the study. Fasting plasma glucose, lipid

profile, renal and liver function test were estimated at baseline and at the end of twelfth week. A paired t-test was used to assess the statistical significance between baseline and final measurements. Paired t-test revealed that the Cholesterol ($p < 0.001$), Triglycerides ($p < 0.001$), were HDL ($p < 0.0013$), LDL ($p < 0.000$), Cho/HDL ($p < 0.09901$), significantly reduced after MMC administration. MMC demonstrated a significant reduction in the Lipid profile of the study participants, demonstrating that MMC is safe to use as a hypolipidemic medication. A significant reduction in SGOT, SGPT, and alkaline phosphates and serum creatinine levels were also observed.

OP-7

ANTI-PROLIFERATIVE AND APOPTOTIC EFFECT OF AESCIN ON KB AND HEP2 LARYNGEAL SQUAMOUS CARCINOMA CELLS.**R. Hemavardhini and K. Suresh**

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Aescin, the major bioactive principle and a mixture of saponins from *Aesculus hippocastanum* (*Hippocastanaceae*), the horse chestnut tree. It possesses antitumor, antiinflammatory, antiedema, antianalgesic, antipyretic and vasoprotective activities. In this study, we investigated the antiproliferative activity and apoptotic induction potential of aescin in mouth (KB) and Laryngeal cancer (Hep-2) cells by cytotoxicity studies (MTT assay), ROS generating potential (Alamar Blue assay), cell adhesion (Hexosaminidase assay) and cells

count by the Trypan blue dye exclusion method. Our results indicated that aescin induced apoptosis as evidenced by loss of cell viability in KB and Hep-2 cells. Further, we also observed the role of aescin on modulation of p53, Bcl-2, TNF- α and NF κ B expressions in KB and Hep-2 cells. Thus, from the results, Aescin induced apoptosis in both KB and Hep-2 cells through modulating apoptotic markers expressions. Therefore, Aescin might be used as a therapeutic agent for the treatment of mouth and laryngeal cancer.

OP-8

COMPARATIVE ANALYSIS OF EFFICACY AND SAFETY OF DIACEREIN VERSUS S-ADENOSYL METHIONINE IN THE MANAGEMENT OF OSTEOARTHRITIS OF KNEE JOINT**C. R. Gayathri**

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Osteoarthritis (OA), the most common type of arthritis, is a degenerative joint disease primarily affecting the articular cartilage, which is commonly encountered in the geriatric age group. The current treatment of osteoarthritis is primarily focused on symptomatic relief by use of anti-inflammatory agents and analgesics. These drugs tend to cause significant side effects without modifying the underlying pathogenesis of the articular disease. Drugs like Diacerein and S-adenosyl methionine (SAME) are used to remodel the cartilage and slow the progression of the disease, by acting through different mechanisms. Though there is documented evidence of the efficacy of both agents used individually in several clinical trials, only a few report a comparison. A prospective randomised interventional study was planned comparing diacerein with SAME for 12 weeks in the management of OA of the knee. 40 patients in each

group were randomly assigned to receive either diacerein 50 mg twice daily or S-adenosyl methionine 200 mg thrice daily for 12 weeks. Both groups received a short course of diclofenac 50 mg bd for one week. Clinical assessment of pain was done using Lysholm knee scoring scale at 1st, 4th & 12th week and further evaluated radiologically. Our study showed that both drugs showed an equieffective potential when evaluated individually, in reducing pain over a period of 12 weeks. But the comparison between the two groups showed a marginal improvement in pain relief from the 4th to 12th week in the diacerein group when compared to SAME group, indicating a slower onset of action of both drugs. Since no radiological changes were evident during the 12-week protocol, studies of longer duration are needed to evaluate the long-term effectiveness of these drugs.

OP-9

PROTECTIVE EFFECT OF TAURINE AND GLUTATHIONE AGAINST MERCURY INDUCED TOXICITY IN THE BRAIN TISSUE OF RATS**¹S. SankarSamipillai and ²G. Jagadeesan**¹PG & Research Department of Zoology, Govt. Arts College, Chidambaram-608102.²Department of Zoology, Annamalai University, Annamalai Nagar-608 002.

The present study is attempted to investigate the effect of taurine and glutathione in the brain tissue of mercuric chloride induced toxicity in rats. The sub-lethal dose of mercuric chloride (2mg/kg body wt. of the animal) was administered in rats orally for 30 days. In the present

study, the histopathological changes were observed in the brain tissue of rats. During the mercuric chloride treatment, the intoxicated brain tissue showed the irregular neuroglial cells and vacuoles. During the taurine and glutathione treatment, the restoration of

histoarchitecture of brain tissue was noticed. The present study suggests that significantly taurine protected the brain tissue than glutathione.

OP-10

A STUDY ON ENZYMATIC AND NON-ENZYMATIC ANTIOXIDANT ASSAYS AND THEIR ROLE AS A PRECURSOR TO DIABETES MELLITUS

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The widespread usage of synthetic pesticides began in the middle of the last century in order to control and destroy the pests and to increase the food production. The extensive use of pesticides leads to accumulation of toxic residues in soil, water and enters into the food chain thereby causing serious environmental pollution. The public health impact of pesticides mainly occurs by two ways (1) acute intoxication exposed especially in occupational populations and (2) indirect exposure of the general population through air, water and food contaminated with pesticide residues. When human beings are exposed to pesticide, the chemical agents inhibit the function of acetylcholine esterase, which results in its accumulation in the human body. This in

turn stimulates nicotinic expression causing hypertension and hyperglycemia. Now a day's diabetes is reaching the epidemic proportions and is one of the most prevalent health issues in developing countries including India. Oxidative stress induced tissue damage could contribute and accelerate the diabetes related complications. The management of such oxidative stress is the biggest challenge. The main objective of the present work is to study the enzymatic and non enzymatic antioxidant assays of organisms collected from the pesticides contaminated sites, which holds a key role in the insulin resistance and β cell dysfunction related to diabetes mellitus.

OP-11

PHYSICO-CHEMICAL CHARACTERIZATION AND MOLECULAR DOCKING STUDIES OF CYTARABINE LOADED CHITOSAN NANOPARTICLES

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Cancer, the devastating disease, is the second cause of mortality in India. Cytarabine, a nucleoside analogue, widely used as an anticancer therapeutic for haematological tumours such as acute myelogenous leukaemia, meningeal leukaemia and Hodgkin's lymphoma. However, it has very low bioavailability due to the short half-life in the blood stream that reduces its therapeutic index. With the aid of drug delivery systems, the therapeutic efficiency can be improved. In our study, we have selected chitosan, a biodegradable polysaccharide as a delivery vector for cytarabine. Cytarabine encapsulated chitosan nanoparticles were prepared by Ionic Gelation Method described by Calvo *et al.* FT-IR studies confirmed the presence of cytarabine in the chitosan nanoparticles. Transmission electron microscopy showed that the obtained nanoparticles are spherical in shape with an average particle size of less than 100 ± 10 nm. The percentage of encapsulation efficiency was found to be 71.33 ± 1.24 %. In the present study, 50% of cytarabine was released after 48 hours, followed by a slow and sustained release at physiological pH. In addition to this, we performed molecular dynamic simulation of polymer drug interaction to study the

encapsulation of cytarabine in chitosan and its controlled release. The simulation was performed using the GROMACS simulation package v5.4. In this simulation, one chitosan polymer was used to understand the polymerization of a single cytarabine. The aggregation process was very rapid and the equilibrium was achieved in 2.5 ns. The stability of the encapsulation was retained by the hydrogen bonds until it got released after 3.0 ns at physiological pH. The prepared chitosan nanoformulation can be applied for effective cytarabine delivery.

OP-12**COMPARATIVE ASSESSMENT OF *IN VITRO* FREE RADICAL SCAVENGING POTENTIAL OF THE ETHYL ACETATE AND ETHANOLIC LEAF EXTRACTS OF *MADHUCA LONGIFOLIA*****N. Devi and R. Sangeetha**

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The main objective of the present study was to compare and assess the effect of *in vitro* free radical scavenging activity of the ethyl acetate and ethanolic leaf extracts of *Madhuca longifolia*. By using different models such as DPPH radical scavenging, superoxide radical scavenging, ABTS radical cation scavenging and Nitric oxide scavenging the antioxidant potential was evaluated. Ethanolic extract showed effective scavenging activity in DPPH assay, superoxide radical and ABTS assay. Ethyl acetate extract showed effective Nitric oxide

scavenging activity. In addition, total phenolic content (TPC) and total flavonoid content (TFC) of the extracts were evaluated. It was observed that the ethanolic extract contained high level of phenolic content that might have accounted for the strong activity observed against the free radicals. Thus, the results revealed that the ethanolic leaf extract has high antioxidant potential as compared, to ethyl acetate extract, which can be explored as a basis for the therapeutic purpose.

OP-13**WORKFORCE AND CHALLENGES OF PHARMACISTS IN MANAGEMENT OF NON-COMMUNICABLE DISEASES – A QUALITATIVE RESEARCH****M. Dheenadhayalan, S.R. Chathreian, P. Jeevitha**

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The study was performed to explore factors influencing the pharmacist University students in different setup such as hospital and community in the management of non-communicable disease and also to know the work force provided by them. It was an in depth and face to face interview with the pharmacists on different setup consists of 7 community pharmacists and 15 hospital pharmacists

of different hospitals in our locality. The answers were recorded and analysed. From the interview, we came to learn about: knowledge, communication, attitude, and environment of pharmacists in relation to the non-communicable disease. Thus, there is a need for health service research to determine how pharmacists can be best used to prevent and manage the disease.

OP-14**A MODEL OF NON-LINEAR DYNAMIC APPROACH FOR DIABETES MANAGEMENT- A CASE SERIES****Depty Nair**

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The conventional understanding about diabetes mellitus (DM) revolves around hyperglycemia associated with physical symptoms like polyuria, polydipsia, and polyphagia. Ayurveda views every individual as a separate complex dynamic entity, so also the disease. Considering this non-linear relationship between the disease and the diseased Ayurveda advocates an individualized and personalized approach. The treatment principles for management of DM in Ayurveda focus on improvement in clinical symptoms, metabolism and quality of life rather than mere glycemic control. All the cases discussed here presented with hyperglycemia with associated physical symptoms and were found responding only to a personalized management protocol rather than usual hypoglycemic formulations. Case 1 presented with FBS levels as high as 275-300mg/dL associated with pain in the chest region, disturbed sleep, cough and dyspnea. Deviating from the hypoglycemic

spectrum of Ayurveda drugs symptomatic approach yielded in controlling the blood sugar levels to normal while effectively curing the symptoms. Case 2, presented with considerable level of mental stress. Focus was laid on the stress factor, Considering the stress factor appreciable results were obtained in the clinical symptomatology as well as the blood sugar values. Case 3, an obese patient not responding to the usual hypoglycemic prescriptions in Ayurveda was administered with anti-obesity formulations with yielding results. Case 4, presented with normal blood glucose values but complained of polyuria with turbid urine. Though the biochemical assessment was not indicative but the symptomatology coincided well with *Prameha* spectrum (diseases related to urinary bladder) and was managed with usual formulations indicated in *Prameha* Global pattern of diabetic epidemic, may not be completely reversible; India is also not an exception to

this. Ayurveda do not speculate the association between DM and much discussed risk factors like sedentary lifestyle and faulty dietary habits. But as evident from the observations of the cases included in this study, the generalization of a common management protocol to the entire diabetic community aimed at achieving a good

glycemic control is a potential contributor to the poor statistics on diabetic control. Thus, based on the present work it can be concluded that designing an individualized management protocol is essential for achieving an absolute diabetic control.

OP-15

POTENTIAL OF MEDICINAL PLANTS USED IN MATHUMEGAM (DIABETES) ON HERBAL MEDICINE NORTHERN PROVINCE SRI LANKA

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Sri Lanka is a small country, but with a rich floral diversity of medicinal plants. Herbal Medicine is a dominant system of medicine, practiced by the local tribes of this region for the treatment of diabetes. The present study was designed to identify the potential of medicinal plants for the management of Mathumegam (Diabetes) in northern province. Area map was used to locate and count the number of medicinal plants used to treat diabetes in northern province. The required information was collected from the traditional healers, who are practicing for diabetes and from quotations mentioned in the Siddha literature Gunapadam (Murugasamuthaliyaar 2001), regarding the medicinal uses and Siddha pharmacodynamics of medicinal plants used in mathumegam. A total of 26 species of medicinal plants were recorded. Grouping the identified medicinal plants based on parts used, seeds (2), leaves(9), flowers(2), roots(6), barks(3), young pods(2), rhizome(1), stem(1), dry-fruit(1) and secretory material such as gum(1). Further grouping based on morphology

revealed that trees (46.15%), climbers (26.92%), herbs (19.23%), shrubs (3.8%), and lianas (3.8%). Unlike allopathy system of medicine, different herbs are prescribed according to the different signs and symptoms of mathumegam. All the identified herbs are non-toxic. Out of 26 identified plants, 6 plants can also be used as spinaches, namely *Gassia auriculata*, *Gymnema sylvestre*, *Gymnema lactifera*, *Marsilea grandiflor*, *Murraya koengii*, and *Coccinea grandis*. Out of 26 medicinal plants 3 are used as beverages namely *Cassia auriculata*, *Eugenia jambolana*, and *Hemidesmus indicus*. Further the public must be aware to use these medicinal plants during Mathumega condition. According to the Siddha fundamental Mathumegam is due to increase of "Kapha". Kapha in Guru, cold in character which has pithruvivi and appu pandhabha too. Most of the medicinal plants ingredients are hot in potency and has pungent in vipaka, which has laghu in character. This can neutralize kapha and reduce diabetes.

OP-16

ASSOCIATION OF SYSTEMIC INFLAMMATION WITH INSULIN RESISTANCE IN PCOS WOMEN

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Polycystic Ovarian Syndrome is a spectrum of complex endocrinopathy of unknown origin that affects approximately 9-21% of women in reproductive age group. It is characterized by clinical or biochemical hyperandrogenism, chronic ovulatory dysfunction, and polycystic ovaries. The pathophysiology of PCOS is not completely understood, however insulin resistance and associated hyperinsulinemia are found to be central to the pathogenesis in both obese and non-obese women having PCOS. Serum high sensitivity C-reactive protein (hsCRP) is a most reliable circulating marker of chronic subclinical inflammation. Some studies have examined hsCRP levels in women with PCOS; however, the results are not consistent. So in the present study, we investigated the association of the association of

inflammation and insulin resistance in Polycystic Ovarian Syndrome. Thirty subjects (18-30 yrs) newly diagnosed with PCOS and age matched controls were selected for this study. Fasting Plasma Glucose, serum insulin and hsCRP of all the participants were measured. HOMA- IR formula was used to calculate insulin resistance. hs-CRP and insulin resistance were significantly elevated in PCOS women compared with controls ($p < 0.001$). A significant positive correlation between hsCRP and insulin resistance ($r = 0.59$, $p < 0.049$) and hsCRP with insulin levels ($r = 0.5$, $p = 0.006$) was also observed. Elevated systemic inflammation may contribute to increased insulin resistance in PCOS women and it needs further studies to explore the mechanism.

OP-17

A STUDY OF RED CELL INDEX AS A MARKER OF SEVERITY OF HEART FAILURE**K.N. Indhuja, Chidambaram, Periasamy, Nanjilkumaran**

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To study potentially novel laboratory marker of red cell distribution width as a marker of severity of heart failure (HF). 100 subjects admitted to department of Medicine, Rajah Muthiah Medical College and Hospital, Chidambaram with clinical evidence of heart failure were selected after applying exclusion criteria. All cases were subjected to a detailed history and clinical examination based on a simple questionnaire. NYHA functional class was applied and patients were classified into 4 classes of heart failure. Essential biochemical tests & imaging were done. For complete blood count including red cell indices, blood samples were collected

from antecubital vein, transferred to an EDTA test tube and analysed in an automated cell analyser. The RDW-SD is more sensitive than RDW-CV. Hence it has been used for comparison in this study. The mean RDW among the 4 groups based on ejection fraction values were compared. Mean RDW was higher in the group with severe heart failure when compared with moderate and mild disease. Our study found that high RDW was associated with increased severity of heart failure. Elevated RDW is a predictor of morbidity & low ejection flow (EF) in HF patients.

OP-18

IMPLICATIONS OF FLUORIDE TOXICITY IN THE ONSET OF NON-COMMUNICABLE DISEASES**C. Sharmila and S. Subramanian**

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Fluoride is the lightest member of the halogen group and is one of the most reactive of all chemical elements. It is the most electronegative of all the elements. Fluoride is a ubiquitous element in the environment. It is often termed as the double edged sword as it has a remarkable prophylactic effect at low concentrations by inhibiting dental caries, while at higher concentrations it causes dental and skeletal fluorosis. Endemic fluorosis is prevalent in many parts of the world and causes damage not only to hard tissues of teeth and skeleton, but also to soft tissues, such as brain, liver, kidney, and spinal cord and also fluoride is a serious health hazard across several nations, and chronic intake of fluoride deranges the carbohydrate, lipid and antioxidant metabolism in general. Increased generation of reactive oxygen species and accumulation of lipid peroxides are considered to play an important role in the pathogenesis of chronic fluoride toxicity. Fluoride is thought to inhibit the activity of antioxidant enzymes such as superoxide dismutase (SOD), glutathione peroxidase, and catalase. Moreover, fluoride can alter glutathione levels, often resulting in the excessive production of ROS at the mitochondrial level, leading to the damage of cellular components. It is known that excessive ROS production leads to macromolecule oxidation, resulting in free radical attack of membrane phospholipids with resulting membrane damage via induction of lipid peroxidation, mitochondrial membrane depolarization, and apoptosis. Antioxidant treatment consistently protects cells from the lipid peroxidation caused by fluoride exposure, suggesting that oxidative. Fluoride directly reduces insulin synthesis in rats. Microcirculatory defects

increased capillary permeability and altered protein biosynthesis in the pancreas is associated with fluoride exposure. Because human hormones interact with each other, the known adverse effect of Fluoride on melatonin production and the knock-on effect on insulin should also be considered. The fact that fluoride causes hypothyroidism also exacerbates the damage to diabetics through reduction of peripheral glucose metabolism. Chronic Fluoride Intoxication (CFI) and have lower insulin and increased C-peptide serum levels it was shown that the incidence of diabetes increased with years of exposure. The lower serum insulin levels in fluoride intoxication might be due to associated liver damage. Fluoride induced hyperglycemia has been stated to be mainly due to increased hepatic glycogenolysis. People exposed to high fluoride levels in their drinking water suffer a high incidence of skeletal fluorosis they exhibit a higher and longer lasting blood glucose level after an oral glucose tolerance test (OGTT). The role of chronic fluoride intoxication in the onset of non-communicable diseases such as diabetes, cancer, arthritis and cardiovascular diseases underline the need for in depth studies related to the molecular mechanisms involved in the genetic level.

OP-19

GREEN SYNTHESIS AND CHARACTERIZATION OF SILVER NANO-PARTICLES USING PSOLAREA CORYLIFOLIA FOR VITILIGO DISEASE**¹R. Mahalakshmi, ¹D. Abdul Rahman, ^{1,2}R. Balabhaskar, ¹Aadarsh Prasanna**¹Department of Biotechnology, SRM Arts and Science College, Affiliated to Madras University, Kattankulathur, 603203.²Department of Biochemistry, SRM Arts and Science College, Affiliated to Madras University, Kattankulathur, 603203.

Psoralea Corylifolia is an important herb used in the Indian medicine system from ancient times for relieving various problems like vitiligo, leucoderma, skin rash and skin infections. Vitiligo is a non-communicable skin disease and this study was focused on the impact of *Psoralea corylifolia* on vitiligo disease. In the current work, silver nanoparticles were synthesised using *Psoralea corylifolia* and the nanoparticles were characterized by UV spectrophotometer, Fourier-transform infrared spectroscopy (FTIR) and Field emission scanning electron microscopy (FESEM). Field

emission scanning electron microscopy (FESEM) Study revealed that the shape of the particles were spherical with a diameter of 160-180nm. It was confirmed by UV spectrophotometry which showed peak at 672nm. The Fourier-transform infrared spectroscopy (FTIR) study showed that the nano particle formed in this process is crystalline. Currently cell line works have been initiated to confirm the cytotoxicity of synthesized nano particle and to study its effect on vitiligo. These particles along with the plant extract can be used for the treatment of skin rashes and vitiligo disease.

OP-20

HEART FAILURE WITH PRESERVED EJECTION FRACTION: IS THIS RELEVANT?**R. Krishnapriya, R. Umarani, E. Balasubramanian, K. A. Vivek**

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Heart failure with preserved ejection fraction (HFpEF) is an emerging health problem worldwide and is increasing in prevalence with aging of population. Yet significant queries still surround its etiology, pathophysiology, clinical course and treatment, leaving the physicians in confusion regarding its proper management. At present, nearly half of the patients diagnosed with HF are found to have Ejection Fraction to be normal or near normal. This clinical condition is termed as "Heart Failure with preserved Ejection Fraction" (HFpEF) or "Diastolic Heart Failure" (DHF). The incidence of HFpEF increases with age, and therefore half of the elderly people with

heart failure may have isolated diastolic dysfunction. With early diagnosis and treatment, the prognosis is more favourable in diastolic dysfunction than systolic dysfunction. The classical risk factors for HFpEF include age, hypertension, diabetes mellitus, atrial fibrillation, aortic stenosis, coronary artery disease and metabolic syndrome. Due to increasing propensity for these risk factors, there is a possibility that the burden of HFpEF is increasing in India. But sufficient studies regarding etiologies, mortality and morbidity are not available. Our data will highlight on prevalence, clinical profile, risk factors and prognosis of patients with new onset HFpEF.

OP-21

IMPACT OF RADIATION THERAPY ON BIOCHEMICAL CHANGES IN NEUTROPHILS OF CERVICAL CANCER PATIENTS**Gayathri Gunalan¹ and K. Vijayalakshmi²**¹Siddha Regional Research Institute, Kuyavarpalayam, Puducherry, India, Pincode- 605013.²Bharathi Women's College (Autonomous), Chennai, Tamil Nadu, Pincode- 600108.

Cervical carcinoma is the second most common malignancy seen among women in the world. Neutrophils constitute the "first line of defense" against any infectious agents that penetrate the body's physical barriers. The present study was conducted to investigate the effect of radiotherapy on biochemical changes in neutrophils of cervical cancer patients. Blood samples were collected from 30 women with biopsy-proved

squamous cell carcinoma of the cervix of stage IIb, before and after radiotherapy. The Absolute Neutrophil Count (ANC) was estimated in whole blood. Neutrophils were then isolated from blood by density gradient centrifugation. Biochemical parameters like total protein, glycogen, total lipid, cholesterol, triglycerides and fatty acids were determined before and after radiotherapy using standard procedures. Lipid peroxides, conjugated

dienes, hydroperoxides, nitrites, Myeloperoxidase (MPO), alkaline phosphatase and antioxidants like Superoxide dismutase(SOD), catalase, Glutathione reduced (GSH), Glutathione peroxidase (GSH-PX), ascorbate were also estimated in neutrophils of cervical cancer patients before and after radiotherapy. They were compared with age and sex matched healthy volunteers. The neutrophil count was increased significantly in cancer patients compared to control subjects and it was decreased upon radiation therapy. Upon radiotherapy, the level of all the biochemical parameters, oxidation

products and enzymes like myeloperoxidase and alkaline phosphatase were decreased and the antioxidants levels were increased significantly in neutrophils of cervical cancer subjects. This study highlights the impairment in the neutrophil function in cervical cancer patients, which may lead to reduced immune status and it was brought to near normal upon radiation treatment. Thus, it may be concluded that radiation therapy has increased the biochemical parameters and decreased the oxidative stress in neutrophils of cervical cancer patients.

OP-22

A PROSPECTIVE STUDY OF DRUG UTILIZATION PATTERN OF ANTI- EPILEPTIC DRUGS AND THEIR ADVERSE EFFECTS IN A TERTIARY CARE HOSPITAL

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Epilepsy or seizure disorder is a common neurologic disorder in the pediatric age group and occurs with a frequency of 4 -6 cases per thousand children. Epilepsy, particularly childhood epilepsy, remains a challenge to treat. The management of epilepsy is primarily based on the use of anti-epileptic drugs. Surgery and diet therapy are the other modes of treating childhood seizures. This study was done to get an insight into the utilization pattern of anti-epileptic drugs (AEDs) used in pediatric seizures. This prospective, longitudinal study was conducted for a period of 8 months in Paediatric Neurology Department of a tertiary care teaching hospital. The data collected from 50 children at the end of the study, were compiled in a specially designed data

form and were analyzed. The distribution of Paediatric seizures was found to be high in male children (62%) and in the age group of 2 to 5 years (46%). The majority of the children (70%) were diagnosed with Generalized Tonic-clonic seizures. Sodium valproate was the commonly prescribed AED in all forms of seizures followed by Carbamazepine(18%), Phenobarbitone(4%) and Phenytoin Sodium (4%). AEDs were mostly prescribed as monotherapy(82%). Adverse reactions noted during this study was minimal(12%). To conclude, Sodium valproate, a conventional AED still remains the commonly prescribed AED for all types of seizures in children aged 2 to 16 years and also was found to be effective and safe.

OP-23

EFFECT OF *MIMOSA PUDICA L* PRETREATMENT ON ANTIOXIDANT STATUS AND LIVER ENZYME MARKERS IN ACUTE PARACETAMOL-INDUCED HEPATOTOXICITY IN RATS

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Liver diseases are the most common ailment all over the world, mostly caused by viruses, toxic chemicals, excessive intake of alcohol, high doses of paracetamol, carbon tetrachloride, and chemotherapeutic agents etc. Paracetamol poisoning is the most common cause of acute liver failure in the developed world. There is a great need to assess the scientific basis for the medicinal plants that are claimed to have hepatoprotective activity. *Mimosa pudica L.* (Family Mimosaceae) is locally known as lajwanti is native of Central South Asia, East Asia and many pacific Islands. In traditional healthcare system, it has been used in the treatment of antidiabetic, antioxidant, anti-asthmatic and wound healing activities. The present study was aimed to explore the hepatoprotective effect of ethanolic extract of *Mimosa*

pudica L against paracetamol induced liver injury in experimental rats. Liver injury was induced by a single dose of paracetamol (100 mg/kg b.w.) in male Wistar rats. Paracetamol intoxication led to a significant increase in the levels of aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP) and decrease in the levels enzymatic and non enzymatic antioxidants and histopathological changes in liver tissues. Oral pretreatment with *Mimosa pudica L* (10 mg/kg/b.w) daily for 7 days significantly diminished the levels of serum AST, ALT and AST, and attenuated the oxidative stress by brought back the levels of enzymatic and non enzymatic antioxidants. Histopathological examinations of the liver tissues of

control and treated groups also confirmed the hepatoprotective activity *Mimosa pudica*.

OP-24**CHLOROGENIC ACID: AN EMERGING THERAPEUTIC AGENT**

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Chlorogenic acid, the ester of caffeic and quinic acid, is found in number of plants, fruits and vegetables. It is rich in the eggplant fruits, coffee beans, apple, pears, tomatoes, carrot, potato and blueberries. In recent years, chlorogenic acid received much attention due to its

diverse biochemical, molecular and pharmacological properties. The aim of the presentation is to explore and discuss its beneficial effects and reported mechanism of action in brief.

OP-25**DIOSMIN REDUCES CELL VIABILITY OF A431 SKIN CANCER CELLS THROUGH APOPTOTIC INDUCTION**

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in vitro cytotoxic potential of the diosmin was assessed using MTT assay (cell viability), dual staining (apoptotic induction), dichloro-dihydro-fluorescein diacetate assay (reactive oxygen species generation), DNA fragmentation study, Western blotting analysis (apoptotic markers expression) and flow cytometry (cell cycle arrest) in A431 skin cancer cells. Diosmin reduced the cell viability of A431 cells in a dose-dependent fashion and the inhibitory concentration 50% value was attained at 45µg/ml using MTT assay. Diosmin at a concentration

of 45µg/ml generated excessive ROS in A431 cells, as compared to untreated cells. Diosmin treated A431 cells also revealed multiple DNA fragments than the untreated cells. Diosmin upregulated the expression of p53, caspases 3 and 9 and downregulated the expression of Bcl-2, matrix metalloproteinases-2 and 9 in A431 cells. The cytotoxic effect of diosmin is probably due to its ROS-mediated apoptotic induction potential as well as due to its role in the inhibition of invasion in the A431 skin cancer cells.

OP-26**PROTEIN UNFOLDING AND MISFOLDING IN TUMOR CELLS**

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High metabolic demand in tumor cells resulted in the accumulation of unfolded and misfolded proteins in the endoplasmic reticulum. The diverse pathological conditions that influence the accumulation of misfolded proteins include oxidative stress, viral infection, protein mutation, high cholesterol, hypoxia and glucose deprivation. The genes which are often associated with

the protein misfolding in cancer cells includes P⁵³, src family kinases, heat shock protein, mTOR etc. The aim of this presentation is to explore how protein misfolding or unfolding occurs in various genes that leads to carcinogenesis. The investigation of protein misfolding targets could thus improve the cancer therapy.

OP-27**ROLE OF HEAT SHOCK PROTEIN IN CARCINOGENESIS**

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Understanding the mechanisms to realize how cells respond to environmental and physiological insults.

Moreover, the secret behind the tumor cells to withstand the harsher growth conditions as well as cope up with the

drug should be evaluated. Heat shock proteins (HSPs), molecular chaperons, are responsible for folding of newly synthesized polypeptides. HSPs play a vital role in preventing the cell death and promoting cell recovery

during stress induced protein misfolding. The aim of this presentation is to explore the role of HSPs in carcinogenesis with special reference to protein misfolding.

OP-28

ANTI-CELL PROLIFERATIVE, ANTI-INFLAMMATORY AND ANTI-ANGIOGENIC ACTIVITIES OF VANILLIC ACID DURING DMBA INDUCED HAMSTER BUCCAL POUCH CARCINOGENESIS

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Vanillic acid, a naturally occurring bioactive substance, possesses diverse pharmacological potential including free radical scavenging and anticancer properties. Abnormal cell proliferation, inflammation, angiogenesis, invasion and metastasis are hallmarks of cancer. Aim of the present study is to explore the anti-cell proliferative, anti-inflammatory and anti-angiogenic efficacy of vanillic acid in DMBA induced oral carcinogenesis. Topical application of DMBA for 14 weeks in the buccal pouch of hamsters resulted in well developed oral squamous cell carcinoma. NF- κ B, COX-2, VEGF, MMP-2, MMP-9, Ki-67, PCNA and Cyclin D1 expressions were assessed in the buccal mucosa of hamsters using

immunohistochemical staining, Western blotting and RT-PCR methods. Immunohistochemical (Ki-67), Western blotting (NF- κ B, COX-2, VEGF, MMP-2 and 9) and RT-PCR (PCNA and Cyclin D1) studies revealed over expression of above markers in DMBA alone treated hamsters. Vanillic acid (200mg/kg b.w p.o) significantly downregulated the above mentioned molecular markers to near normal range in DMBA treated hamsters. These findings thus confirm the anti-cell proliferative, anti-inflammatory and anti-angiogenic potential of vanillic acid in DMBA induced hamster buccal pouch carcinogenesis.

OP-29

ANTIDIABETIC ACTIVITY OF *IPOMOEA PES-CAPRAE* LEAVES EXTRACT AGAINST STZ- INDUCED DIABETES IN RATS

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The current study was designed to investigate the antidiabetic effect of the *Ipomoea pes-caprae* leaves extract in Streptozotocin-induced diabetic rats. Diabetes was induced in the male Wister albino rats using a single intraperitoneal injection of Streptozotocin at 40 mg/kg b.w. Ethanol extract of *Ipomoea pes-caprae* was administered orally (300 mg/kg body weight) for 45 days. Glibenclamide was used as a standard drug. The levels of blood glucose, hepatic markers (ALP, AST and ALT), TC, TG and LDL-C were significantly increased

while plasma insulin, and HDL-C levels reduced in diabetic rats. Treatment of *Ipomoea pes-caprae* extract significantly reduced the blood glucose level and the activities of ALP, AST and ALT in diabetic rats. Furthermore, a significant reduction in plasma TC, TG, and LDL-C and increase in the level of plasma insulin and HDL-C was noticed in diabetic rats. This study indicates that *Ipomoea pes-caprae* leaves extract possesses antidiabetic and antihyperlipidemic effects.

OP-30

ANTIDIABETIC EFFECT OF *HELICTERES ISORA* FRUITS ON LIPID PROFILE AND OXIDANT STATUS IN STREPTOZOTOCIN (STZ) INDUCED DIABETIC RATS

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The goal of the current study was to evaluate the antidiabetic effect of *Helicteres isora* fruits on lipid profile and oxidant status in Streptozotocin (STZ)

induced diabetic rat model. Diabetes were induced in rats by intraperitoneal administration of 40 mg/kg b.w of STZ. Diabetic rats were treated with *H. isora* fruits (200

mg/kg b.w) and glibenclamide (6 mg/kg b.w) for 45 days. *H. isora* treated diabetic rats showed significantly ($P < 0.05$) decreased the level of blood glucose, TC TG phospholipids, LDL, VLDL and lipid peroxidation markers such as LOOH and TBARS, and increased levels of plasma insulin, enzymatic antioxidant (SOD, CAT and GPx), and non-enzymatic antioxidant (GSH,

vitamin C and E). Total cholesterol triglycerides further, the histopathology of pancreas and immunohistochemistry of insulin also clearly showed the protective role of the *H. isora* fruits in STZ induced diabetic rats. The results of the current study demonstrate the antidiabetic effect of *Helicteres isora* fruits diabetes mellitus in STZ induced in rats.

OP-31

THE OCCUPATIONAL STRESS AND MENTAL HEALTH IN CARDIAC AND NON-CARDIAC PATIENTS

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Much of research studies in global level have shown that occupational stress is one of the strong deterrent factors of coronary heart diseases among people in general and causes ischemic heart diseases in particular. However, exploring the extent to which the type or nature of ailments and its subsequent risk factors have an effect on the onset of mental health will help evolve suitable preventive measures. The present study attempts to explore the status of mental health and occupational stress with respect to two categories of patients: those who are suffering from cardiac problems and those suffering from non cardiac health problems. The occupational stress Questionnaire and Mental Health Questionnaire were administered to both cardiac and non cardiac patients. The cardiac group consisted of 40 patients, who were being treated at the cardiology

department of a reputed government hospital, and non-cardiac group 40 patients consisted of our patients of the same hospital being treated for non cardiac problems like knee pain, headache, etc. Responses to these self-reported questionnaires were subjected to statistical analysis to find out the difference between cardiac and non-cardiac groups. The results revealed that cardiac patients tend to have lower levels of mental health than non cardiac patients. Similarly, cardiac patients were reported to have higher levels of stress due to role ambiguity, powerlessness, intrinsic impoverishment and unprofitability. The implications of the study were implementation of interventions to improve the internal strength of cardiac patients to overcome various aspects of occupational stress.

OP-32

QUANTITATIVE PHYTOCHEMICAL ANALYSIS AND ANTICANCER ACTIVITY OF *BAUHINIA TOMENTOSA* LEAVES-AN INVITRO STUDY

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Chemistry of natural products has endless potential. Most important of such molecules are flavonoids, alkaloids, tannins, terpenoids, saponins and other phenolic compounds. *Bauhinia tomentosa* is one such medicinal plant belonging to *Caesalpinaceae* family. Various parts of this medicinal plant have been used to treat various ailments in traditional systems of medicine. The preliminary phytochemical studies indicated that the ethanol extract contains much phytochemicals than the others and hence, the ethanol extract of the *B.tomentosa* leaves (EBT) was selected for further studies. The present study is aimed at to estimate the amount of phytochemicals and to determine the *in vitro* anticancer activity of ethanol extract of *B.tomentosa* using A549 cell lines (Lung Cancer cell lines). Quantitative analysis was done using standard procedures to determine the amount of total phenols, flavonoids tannins and alkaloids phytochemicals present. The ethanol extract of *B.tomentosa* (EBT) was subjected to MTT assay, AO-EtBr

double staining and DNA fragmentation analysis. From the results, it was observed that there were appreciable presence of total phenols, flavonoids, tannins and alkaloids. Ethanol extract of *B.tomentosa* leaves. The results of the anti-cancer studies reveal that the EBT has appreciable cytotoxic effect against A549, (lung cancer cell lines). It may be concluded that EBT has significant amount of phytochemicals and also exhibits anti-cancer effect against A549 lung cancer cell line. Further work is being carried out to identify the mechanism of action of EBT against lung cancer.

OP-33

DIFFERENCE IN SHORTENING AND CALCIUM SIGNALING IN VENTRICULAR MYOCYTES ACROSS THE WALLS OF THE DIABETIC HEART

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The left side of the heart pumps blood at higher pressure than the right side. Within the ventricles, the electromechanical properties of cardiac myocytes vary transmurally and this may be related to the gradients of stress and strain experienced *in vivo* across the ventricular walls. Electromechanical function in the diabetic heart is frequently compromised. Contraction and Ca²⁺ transport have been investigated in epicardial (EPI) and endocardial (ENDO) left ventricular myocytes in the streptozotocin (STZ)-induced diabetic rat. Diabetes was induced in male rats with STZ (60 mg/kg bodyweight, i.p.) and experiments were performed from 12 weeks after treatment. Diabetes was characterized by 5-fold increase in blood glucose. Shortening and intracellular Ca²⁺ were measured by video edge detection and Fura-2 microfluorimetry, respectively. Whole-cell patch clamp techniques were used to record L-type Ca²⁺ current. The time course of shortening was variously altered in myocytes from STZ compared to control heart. Time to peak (TPK) shortening was prolonged to similar extent in ENDO (110±2ms) and EPI (107±2ms) myocytes from STZ-treated rats compared to ENDO

(90±2ms) and EPI (83±2ms) myocytes from controls. Time to half (THALF) relaxation of shortening was prolonged in ENDO myocytes from STZ-treated rats (59±2ms) compared to ENDO controls (51±1ms). The time course of the Ca²⁺ transient was variously altered in myocytes from STZ compared to control heart. TPK Ca²⁺ transient was prolonged in ENDO myocytes from STZ-treated rats (71±2ms) compared to ENDO controls (61±1ms). THALF decay of the Ca²⁺ transient was prolonged in ENDO myocytes from STZ-treated rats (180±5ms) compared to ENDO controls (150±3ms). Sarcoplasmic reticulum fractional release of Ca²⁺ was reduced in EPI myocytes from STZ-treated rats compared to EPI controls. L-type Ca²⁺ current amplitude, inactivation and recovery from inactivation were not significantly altered in EPI and ENDO myocytes from STZ-treated rats or controls. Regional differences in mechanical function and Ca²⁺ transport across the wall of the healthy heart and the STZ-treated rat heart may underlie some of the hemodynamic properties in normal heart and disturbances in hemodynamic properties in diabetic heart.

OP-34

Subacute toxicity study of cinnarizine in wistar rats by nasal route

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The objective of the present study is to evaluate the potential toxicity in wistar rats of the preclinical safety use of Cinnarizine nasal spray. The study design involved 4 groups of 6 animals per each (male and female) at different dose levels. Cinnarizine nasal spray has been administered in a constant volume of 2 ml/kg nasally for 28 days. No mortality was seen in any of the treatment groups during the course of study. Various physiological, hematological as well as biochemical parameters were studied and found that there is no significant change, which indicates that Cinnarizine nasal spray is nontoxic even at higher dose levels in Wistar rats. Overall tolerability and safety profile of Cinnarizine nasal spray is proved to be good and does not appear to carry the risk of serious adverse effects.

OP-35

EFFECT OF METHANOLIC EXTRACT OF *BRASSICA OLERACEA* ON GENE LEVEL EXPRESSION OF ASC-NLRP3 IN RATS INDUCED WITH EXPERIMENTAL PANCREATITIS- INFLUENCE OF HSP70**S. Rajapriya and A. Geetha**

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Inflammasomes are multi-protein signaling complexes that trigger the activation of inflammatory caspase-1 and the maturation of interleukins. The NLRP3 inflammasome has been the most and is a crucial signaling node that controls the maturation of two proinflammatory interleukins, IL-1 β and IL-18 and this may be a promising target for anti-inflammatory drugs. The ever-increasing problem of pancreatitis due to alcohol abuse demands evaluation of novel drugs of plant origin. This study was designed to investigate the pancreato-protective efficacy of methanolic extract of *Brassica oleraceae* (MEBO) and the influence of heat shock proteins on the functional aspects of NLRP3 inflammasome. The MEBO was subjected to GC-MS and HPLC analysis. Male albino Wistar rats were fed with alcohol (36% of total calories for 5 weeks) and cerulein (20 μ g/kg b.wt i.p, weekly thrice for last three weeks) with or without MEBO (40 mg/kg b.wt). Serum

lipase, amylase, HSP70, inflammatory markers, caspase-1, lipid peroxides, oxidative stress markers and antioxidant status were assessed in pancreas. The gene level expression of inflammatory markers was also determined. Six compounds were identified in GC-MS analysis. Co-administration of MEBO reduced the pancreatic marker enzymes, the level of HSP70, inflammatory markers and caspase-1 and increased the antioxidant status of pancreas. Immunohistochemical analysis confirmed the presence of ASC protein in excess in the pancreas of ethanol-cerulein administered rats than in rats co-administered with MEBO. MEBO co-administration was found to downregulate the mRNA expression of ASC-NLRP3, HSP70, caspase-1 and NF- κ B. MEBO displays specific anti-inflammatory effect probably by down regulating the signaling molecules involved in tissue inflammation in pancreas.

OP-36

ALTERATION OF J-WAVES IN ELECTROCARDIOGRAM – COMPUTATIONAL STUDY**M. Natarajan and J. Krishnan**

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The J-wave syndromes (JWSs), consisting of the Brugada syndrome (BrS) and early repolarization syndrome (ERS), have captured the interest of the cardiology community over the past 2 decades following the identification of BrS as a new clinical entity by Pedro and Josep Brugada. The appearance of prominent Jwaves in the electrocardiogram (ECG) have long been reported in cases of hypothermia and hypercalcemia. More recently, accentuation of the J wave has been associated with life-threatening ventricular arrhythmias. Under these circumstances, the accentuated J wave typically may be so broad and tall as to appear as an ST-segment elevation, as in cases of BrS. In humans, the normal J wave often appears as a J-point elevation, with part of the J wave buried inside the QRS. An early repolarization pattern (ERP) in the ECG, consisting of a distinct J-wave or J-point elevation, or a notch or slur of the terminal part of the QRS with and without an ST-segment elevation, has traditionally been viewed as benign. The benign nature of an ERP was challenged in 2000 based on experimental data showing that this ECG manifestation predisposes to the development of polymorphic ventricular tachycardia (VT) and ventricular fibrillation (VF) in coronary-perfused wedge

preparations. Validation of this hypothesis was provided in this work. These seminal studies together with numerous additional case-control and population-based studies have provided clinical evidence for an increased risk for development of life-threatening arrhythmic events and sudden cardiac death (SCD) among patients presenting with an ERP, particularly in the inferior and inferolateral leads. The lack of agreement regarding the terminology relative to early repolarization (ER) has led to a great deal of confusion and inconsistency in reporting [21–23]. “BrS is diagnosed in patients with ST-segment elevation with type 1 morphology ≥ 2 mm in ≥ 1 lead among the right precordial leads V1, V2, positioned in the 2nd, 3rd or 4th intercostal space occurring either spontaneously or after provocative drug test within intravenous administration of Class I antiarrhythmic drugs. BrS is diagnosed in patients with type 2 or type 3 ST-segment elevation in ≥ 1 lead among the right precordial leads V1, V2 positioned in the 2nd, 3rd or 4th intercostal space when a provocative drug test with intravenous administration of Class I antiarrhythmic drugs induces a type I ECG morphology.

OP-37

EVALUATION OF NEPHROPROTECTIVE ACTIVITY OF *BRASSICA OLERACEA* (BROCCOLI) IN MONO SODIUM GULUTAMATE (MSG) INDUCED NEPHROTOXICITY IN ALBINO RATS**T. Thamaraiselvi, S. Chithra and G. Jayanthi**

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B. oleracea is commonly known as broccoli, one of the traditional vegetable, and natural antioxidant with rich medicinal potential. MSG is a nephrotoxic agent and is recognized as a major public health threat. Aqueous crude extract of *B. oleracea* explore rich phytochemicals in qualitative analysis and high antioxidant potential was observed in *in vitro* free radical (DPPH, SO₂, H₂O₂ & ABTS) scavenging assays. Broccoli restored the status of MSG biochemical alteration in the serum renal tissues of wister rats. Nephrotoxicity was induced in albino wister rats using mono sodium glutamate

(7.5mg/kg, bw). Nephroprotective effect of *Brassica oleracea* (250mg/kg) was assessed by using renal a spectrum of biochemical markers. (AST, ALT, ALP, LDH, G6P, ACP) activities were determined and enzymatic antioxidants (GR, GPX, CAT, SOD) and antioxidant levels of Vit C & GSH, LPO. The results of the present study showed potent nephroprotective effect of broccoli in MSG induced nephrotoxicity in rats. The results were compared with the standard drug, ascorbic acid (300mg/kg, bw).

OP-38

BEHAVIORAL CHARACTERIZATION OF WISTAR RATS IN ROTENONE INDUCED MODEL OF PARKINSON'S DISEASE**K. Srimathi priyanga¹ and K. Vijayalakshmi²**

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Parkinson's disease (PD) is a neurodegenerative disorder characterized by a loss of dopaminergic neurons in substantia nigra pars compacta (SNpc) manifesting changes in motor activities. Clinical features of PD include motor impairments involving resting tremor, bradykinesia, postural instability and rigidity. PD is attributed with oxidative and inflammatory stress and hence drugs targeting these pathways hold promise as neuro-therapeutics. Parkinson's disease was induced in

rats using rotenone (3mg/kg/bwt, p.o) and hesperidin (50mg/kg/bw, p.o) was assessed alone and in combination in rotenone treated rats. The behavioral tests, such as open field test, ladder climbing test and hanging wire test were performed. Oxidative markers were assessed. Disability was noted in the behavior of rats induced with PD. The deficits in behavioral activity due to rotenone was significantly restored by co-treatment with quercetin and hesperidin.

OP-39

NEUROTROPHIC EFFECT OF ASIATIC ACID, A TRITERPENE OF *CENTELLA ASIATICA* AGAINST CHRONIC MPTP/P MOUSE MODEL OF PARKINSON'S DISEASE: THE ROLE OF MAPK, PI3K-AKT-GSK3B AND MTOR SIGNALLING PATHWAYS**J. Nataraj, T. Manivasagam, A.J. Thenmozhi, MM. Essa**

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Regulation of various signalling (Ras-MAPK, PI3K and AKT) pathways by augmented activity of neurotrophic factors (NTFs) could prevent or halt the progress of dopaminergic loss in Parkinson's disease (PD). Various *in vitro* and *in vivo* experimental studies indicated antiparkinsonic potential of asiatic acid (AA), a pentacyclic triterpene obtained from *Centella asiatica*. So the present study is designed to determine the neurotrophic effect of AA against 1-methyl 4-phenyl 1, 2, 3, 6-tetrahydropyridine hydrochloride/probenecid (MPTP/p) neurotoxicity in mice model of PD. AA treatment for 5 weeks significantly attenuated MPTP/p induced motor abnormalities, dopamine depletion and

diminished expressions NTFs and tyrosine kinase receptors (TrKB). We further, revealed that AA treatment significantly inhibited the MPTP/p-induced phosphorylation of MAPK/P38 related proteins such as JNK. Moreover, AA treatment increased the phosphorylation of PI3K, Akt, GSK-3 β and mTOR, suggesting that AA activated PI3K/Akt/mTOR signalling pathway, which might be the cause of neuroprotection offered by AA. The present findings provided more elaborate *in vivo* evidences to support the neuroprotective effect of AA on dopaminergic neurons of chronic Parkinson's disease mouse model and the

potential of AA to be developed as a possible new therapeutic target to treat PD.

OP-40**STUDY OF DRUG INDUCED HYPOGLYCEMIA DURING THE TREATMENT OF DIABETES MELLITUS- A REVIEW**

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Drug induced hypoglycaemia caused by treatment with insulin and insulin secretagogues with compromised defenses against the resulting falling of plasma glucose concentration is the main factor in the management of glucose. It causes recurrent morbidity in most people with type 1, type 2 and often fatal. It impairs physiological and behavior defences against hypoglycaemia. In case of type 1, diabetes control and complication trial, a greater proportion of patients in the

intensively insulin treated group had atleast one episode of severe hypoglycaemia (65 versus 35% of patients in the control group) with overall rates of 61 and 19 per 100 patient years respectively. In case of type 2, one trial (ACCORD), there were more death in intensive treatment and result in arrhythmias. Thus, it is concluded that drug that used in the treatment of diabetes mellitus is causing not only hypoglycaemia but also result in arrhythmias.

OP-41**PREDICTION OF ANTICANCER PROPERTY OF PEPTIDE PACCLNANOCOMPLEX MEDIATED ON MCF-7 CELL LINE**

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Death from cancer is growing in a rapid pace, which is believed to surpass even the cardiovascular diseases. Cancer is caused due to the uncontrollable division of the cells and these cells also has the ability to attack other tissues too, which leads to the formation of tumour mass, vascularization, and metastasis. In this present study the Peptide pACCl had been deigned to inhibit the breast cancer cell (MCF-7). The binding property in the BRCT domain turns the lipogenesis to diminish the level of the cytosolic ACC1 in the mammary epithelial cells. The Peptide pACC1 chitosan nanoparticles had been prepared and subjected in the MTT assay, the flow cytometry, DNA fragmentation assay and western blotting. The apoptotic effect of the peptide chitosan

nanoparticles (PCN) against the MCF-7 cell line were induced in the 2-10 µg/ml. The flow cytometry analysis has revealed a decreased viable cell number, which resulted in the cell cycle arrest. The DNA fragmentation assay had been performed for PCN, which has shown a typical ladder pattern of the inter nucleosomal fragments in the cells after 3, 6, and 12 hours of the treated cells. The Western blot technique has shown that the PCN mitigates the expression of the inflammatory marker. The BAX was increased and BCL2 decreased upon treatment of the PCN. Hence, this formulation could be employed as alone or in combination with the existing therapy to furnish an effective anticancer treatment.

OP-42**A STUDY ON EFFECT OF DISULFIRAM TREATMENT ON LIPID PEROXIDATION AND DYSLIPIDEMIA IN CHRONIC ALCOHOLICS**

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Alcoholism is a major public health problem leading to multiorgan disorders especially liver damage as it is the major organ involved in metabolism of alcohol. Gradual tissue damage and cellular death occurs due to free radical production and accumulation. Oxidative stress and dyslipidemia are well known to occur in chronic alcoholics. This present study was designed to find out

the metabolic derangements in chronic alcoholics and to compare against a group who underwent treatment for the same. 34 chronic alcoholic patients and 20 old patients who got treated for alcoholism were evaluated for their fasting and postprandial glucose level, fasting lipid profile, liver function test, Body Mass Index (BMI), cardiac risk factors and oxidative stress. The mean

duration of alcohol intake among the patients was 9.4 ± 4.3 years. The mean oxidative stress marker plasma MDA level among the cases was 12.3 ± 4.3 $\mu\text{mol/L}$, when compared to the control group of 2.8 ± 0.3 $\mu\text{mol/L}$. All the lipid parameters were significantly elevated in cases than the controls except for HDL-C (37.7 ± 9.1 and 50.8 ± 2.1 respectively), which was decreased. As expected serum GGT levels were elevated in cases 90.9 ± 27.6 IU/L than the controls of 24.4 ± 5 IU/L. Plasma

MDA had positive correlation with TC, TGL, LDL, VLDL and coronary lipid risk factors like LDL/HDL-C, TC/HDL ratio and it was found significant. Chronic alcoholism is known for its metabolic alterations, morbidity and mortality. Early treatment of such addicts and complete abstinence from consumption had shown promising outcomes in this study. Serum GGT and oxidative stress level should be also done to assess such patients for planning complete treatment.

OP-43

SYNTHESIS, CHARACTERIZATION AND ANTICANCER STUDIES ON MACROCYCLIC $\text{Bu}_2\text{Sn(IV)}$ DITHIOCARBAMATE COMPLEXES

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Two macrocyclic [$\{\text{Bu}_2\text{Sn}(\text{bis-dtc})\}_2$] (1 and 2) (where bis-dtc = hexane-1,6-diylbis(4-chlorobenzylidithiocarbamate) (1), hexane-1,6-diylbis(furfuryldithiocarbamate) (2) were prepared and characterized by elemental analysis, IR, ^1H and ^{13}C NMR spectroscopy. Molecular structures of 1 and 2 were evaluated by X-ray crystallography. Crystal structures of 1 and 2 exhibit that both the complexes are dinuclear 26-

membered macrocyclic species of composition [$\{\text{Bu}_2\text{Sn}(\text{bis-dtc})\}_2$]. The metal atoms are embedded in skewed-trapezoidal-bipyramidal coordination polyhedral with asymmetrically coordinating dithiocarbamate ligands. Complexes 1 and 2 were evaluated for their *in vitro* anticancer activity against MCF-7 and HL-60 cells. 1 is more active against both the tested cell lines.

OP-44

HYPONATREMIA AND ITS IN-HOSPITAL MORTALITY IN ST-ELEVATION MYOCARDIAL INFARCTION

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Aim was determine the prevalence and prognostic implications of hyponatremia in the setting of acute ST-elevation myocardial infarction. The study sample consists of 50 patients, presenting with acute ST-elevation myocardial infarction. Plasma sodium concentrations were obtained on admission and at 24, 48, and 72 hours thereafter. Patients with ckd stage 3 and 4, CCF patients on diuretics, previous history of head injury and stroke, known case of hypothyroidism, nephrotic

syndrome were excluded in this study. Hyponatremia, defined as a plasma sodium level <135 mmol/L (<135 mEq/L), was present in 20 patients within first 72 hours of hospitalization where 25% patients died. In rest of 30 patients, only 3.3% of patients died. Hyponatremia on admission or early development of hyponatremia in patients with acute ST-elevation myocardial infarction is an independent predictor of mortality and prognosis.

OP-45

ASIATIC ACID ATTENUATES ALUMINIUM MALTOLATE INDUCED IN VITRO MODEL OF ALZHEIMER'S DISEASE

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Aluminium (Al) is a ubiquitously distributed environmental toxicant that lacks biological functions; however, its accumulation in the brain has been demonstrated to be linked to several neuropathological

conditions particularly Alzheimer's disease (AD). Asiatic acid (AA), a triterpene extracted from *Centellaasiatica*, has been reported to cross the blood brain barrier and also displayed antioxidant and neuroprotective activities.

The present study was aimed to explore the neuroprotective effect of AA against aluminiummaltolate (Al(mal)₃) induced neurotoxicity by assessing cell viability, mitochondrial membrane potential, levels of reactive oxygen species (ROS), DNA damage and apoptosis (Hoechst and dual staining, comet assay; expressions of pro-apoptotic and anti-apoptotic markers in SH-SY 5Y neuroblastoma cells. Pre-treatment with

AA significantly enhanced cell viability, attenuated Al(mal)₃-induced ROS, mitochondrial membrane dysfunction and apoptosis. Downregulation of Al induced neurodegeneration may be one of the approaches to control the impairment of metal ion homeostasis leading to neuronal injury in early development of AD. However, more extensive work in animal model is desirable to confirm its neuroprotective action.

OP-46

IDENTIFICATION OF POTENTIAL CANDIDATE FOR TREAT DIABETES FROM *SCHLEICHERA OLEOSA* (LOUR) OKEN LEAVES

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Diabetes mellitus is a major health growing problem in most countries. The purpose of the study was to evaluate the antidiabetic activity of *Schleichera oleosa* (SO) leaves extracts. The *in vitro* anti-diabetic activity of the SO extracts was measured by using α -glucosidase and α -amylase enzyme inhibitory activity. For *in vivo* studies, diabetes was induced in Wistar albino rats (150–250 g) by using nicotinamide (110 mg/kg/p.o) and single intraperitoneal injection of streptozotocin (55 mg/kg/i.p). Diabetic rats were treated with ethanolic and aqueous extracts, which was compared with the positive, negative control and glibenclamide treated groups. The changes in body weight, oral glucose tolerance test, hypoglycemic effects, serum lipid profile, and histopathological examination were assessed. In *in vitro* antidiabetic study, the ethanol and aqueous extracts were found to be a

potent inhibitor of α -glucosidase and α -amylase activity. Oral administration of SO extracts and standard drug for 28 days caused a significant decrease in the concentrations of fasting blood glucose level, total cholesterol (TC), serum triglycerides (TG), low-density lipoprotein-cholesterol (LDL-C), malondialdehyde (MDA) and significant increase in the concentrations of high density lipoprotein-cholesterol (HDL-C), body weight and antioxidative enzymes in a dose-dependent manner. Preliminary mechanisms were also elucidated. In this study, a novel flavonoid extracted from ethanolic extract of SO was purified using column & TLC. The preliminary structural features of SMK-SO-1 were investigated by FT-IR, ¹H NMR, ¹³C NMR, LC-MS. Hence SMK-SO-1 can be considered for developing into a potent antidiabetic drug.

OP-47

EMERGING SIGNIFICANCE OF MEASURING NON- HDL-CHOLESTEROL IN CORONARY ARTERY DISEASE

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Coronary Artery Disease burden is alarmingly high and is a cause of concern. There are many correctable risk factors for CAD. Of these dyslipidemia is one of the highest risk factor for myocardial infarction because of its direct pathogenic association with atherosclerosis and its high prevalence. Of all the lipoproteins, LDL is recognised to play a major role in CAD. Reduction of LDL-C results in substantial reduction in CAD. However, there are several other atherogenic lipoproteins in the blood like cholesterol-enriched remnants of TG – rich lipoproteins, VLDL, IDL and LDL, which accounts for more than 25%. These are the non-HDL-C resulting in significant proportion of CAD risk. Non-HDL-C is the difference between total cholesterol and HDL-C, and is a more accurate predictor of CAD risk. Non-HDL-C is an essential component that provides a simple and a

practical tool for lipid lowering therapy by taking care of LDL-C and TG targets. When LDL-C target has been reached already, increasing the dosage of statins, adding a non-statin drug and intensifying lifestyle measures is the first step to achieve non-HDL-C lowering. This presentation emphasis on the emerging significance of non-HDL-C in CAD, and its management.

OP-48

COMPLETE HEMOGRAM PROFILE IN CORONARY ARTERY DISEASE**P. Sankara Thiagarajan, S. Balasubramaniyan, N. Paari**

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Aim was analyse of hemogram profile in coronary artery disease patients. The population studied comprised 50 patients with coronary artery disease. The patients of coronary artery disease include unstable angina, stable angina and myocardial infarction. A standard hemogram was done in all patients, which includes hemoglobin, RBC count, WBC count (total and differential), platelet count, MCV, MCHC, MCH and hematocrit. The prevalence of anemia in coronary artery disease patients

was found to be 48% while leucocytosis was observed in 40%. Thrombocytosis was found in 24% and thrombocytopenia in 20%. Iron deficiency anemia was the most common anemia. Anemia and leucocytosis were found to be significantly high in coronary artery disease population. Further studies are needed to evaluate the use of these parameters as risk predictors of coronary artery disease.

OP-49

COMPUTATIONAL STUDY OF CARDIAC MEMORY EFFECTS AND ITS INFLUENCE ON ALTERATION OF T-WAVES IN CARDIAC DISORDERS**A.V.Srinath^a and J.Krishnan^b**

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The heart has its own intrinsic nervous system that operates and processes information independently of the brain or nervous system. This is what allows a heart transplant to work. Normally, the heart communicates with the brain via nerve fibres running through the vagus nerve and the spinal column. In a heart transplant, these nerve connections do not reconnect for an extended period of time; in the meantime, the transplanted heart is able to function in its new host only through the capacity of its intact, intrinsic nervous system. This process is stated as memory. Cardiac memory (CM) is identified as an altered T wave on electrocardiogram and vectorcardiogram that is seen when sinus rhythm resumes after a period of abnormal myocardial pacing. CM frequently is induced by ventricular pacing. Although it has long been known that CM can mimic the T-wave inversions of myocardial ischemia, it

is learned more recently that CM can alter the actions of antiarrhythmic drugs. For the investigation of Memory in the nervous system is essential to model the cells of Ventricular cells, Sino-Atrial node cells, Purkinje fibre cells and atrial cells and these cells are coupled as a network effect, resulting from the activity-dependent synaptic modification in a network of neurons. Like the nervous system, the heart has a network of cardiac cells electrically coupled by gap junctions; the present research work proposes the study on Cardiac Memory with the whole heart model. This includes the effect of Ca²⁺ influx through high threshold, L-type voltage-gated Ca²⁺ (Cav) channels, K⁺ and Na⁺ channels. Finally a model will be developed to find the propagation of Action Potential throughout the heart and its correlation towards the cardiac abnormality and the severity.

OP-50

SELECTION OF BETTER METHOD FOR THE PREPARATION OF NANOPARTICLES BY APPLYING ANALYTIC HIERARCHY PROCESS**C. Saminathan, S. Selvamuthukumar, P. Venkatesan and S. Madhusudhan**

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Novel drug delivery systems have several advantages over conventional multi dose therapy. For the past few decades, there has been a considerable research interest in the area of drug delivery using particulate delivery systems using nanoparticles. Nanoparticles can offer significant advantages over the conventional drug delivery in terms of high stability, high specificity, high drug carrying capacity, ability for controlled release,

possibility to use in different route of administration and the capability to deliver both hydrophilic and hydrophobic drug molecules. A well designed drug delivery system can overcome some of the problems of conventional therapy and enhance the therapeutic efficacy of a particular drug. A number of techniques are available for the preparation of Nanoparticles and the goal is to achieve reproducibility and consistency with

good entrapment efficiency. This is influenced by a number of factors such as process information of the equipment and method, operation skill of the manufacturer, sensitivity of the equipment etc. Hence it is important to incorporate all the factors that could influence Nanoencapsulation in decision making process, while choosing the best technique. In this study, Multi Criteria Decision Making tool (MCDM) and Analytic Hierarchy Process (AHP) are applied to make choice amongst alternative Nanoencapsulation techniques [Solvent Evaporation technique (SET), nano

precipitation method (NPM), Solvent Diffusion method (SDM), Salting out method (SDM) and Ionic Gelation method (IGM)] and thereby opt the best technique. The composite score is used for the final ranking of the alternatives. The solution of the problem involves finding the composite score that reflects the relative priorities of all the alternatives at the lowest level of the hierarchy. Based on highest priority ranking score the suitable method for the preparation of nanoparticle has been selected by employing AHP.

OP-51

PROTECTIVE EFFECT OF DIOSMIN ON ROTENONE-INDUCED APOPTOSIS IN *IN VITRO* NEUROBLASTOMA CELLULAR MODEL

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Several studies have demonstrated a link between mitochondrial dysfunction and many neurodegenerative diseases such as Alzheimer's disease (AD) and Parkinson's disease (PD). In this study, we investigated the possible protective effect of diosmin, a natural flavone glycoside against rotenone (mitochondrial complex I inhibitor)-induced neurotoxicity in SH-SY5Y cells. The cell survival, oxidative stress, mitochondrial dysfunction and apoptosis were analyzed. We found that

diosmin 5 μ M pre treatment enhanced cell viability, decreased TBARS and increased SOD, catalase, GSH and GPx, reduced ROS generation, preserved MMP and reduced the levels of cytochrome c in cytosol and caspases in rotenone treated SH-SY5Y cells. These findings suggested that diosmin treatment might be a novel approach to prevent rotenone-induced neurodegenerative disorder such as PD.

OP-52

CARDIOVASCULAR PROTECTIVE EFFECTS OF D-CARVONE ON NITRIC OXIDE DEFICIENT HYPERTENSIVE RATS

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The present study was planned to examine the cardiovascular protective effect of D-carvone against L-NAME (N^o-nitro-L arginine methyl ester hydrochloride) induced hypertension in male Wistar rats. Hypertension was prompted in adult male albino rats of the Wistar strain, weighing 180-220 g, by oral administration of the L-NAME (40 mg/kg body weight/day) in drinking water for 4 weeks. The L-NAME hypertensive rats revealed significant ($P < 0.05$) rise in the blood pressure, heart weight, heart rate and water intake. L-NAME rats also revealed significant ($P < 0.05$) increase in the levels of thiobarbituric acid reactive substances, lipid hydroperoxides in plasma and tissues (heart and aorta), and significant ($P < 0.05$) drop in the body weight, nitrite and nitrate levels in plasma and aorta. Activities of enzymic antioxidants such as superoxide dismutase, catalase and glutathione peroxidase in erythrocyte and tissues and the levels of non-enzymic antioxidant such as reduced glutathione in plasma and tissues, ET-1 mRNA

expression in aorta was significantly ($P < 0.05$) increased in L-NAME rats. D-carvone, supplementation (20 mg/kg) daily for four weeks brought back all the above parameters to near normal level. The above outcomes were confirmed by the histopathological examination. No significant ($P < 0.05$) effect was observed in control rats treated with D-carvone, (20 mg/kg). These results suggest that D-carvone, performed as an antihypertensive and cardiovascular protective agent against L-NAME induced hypertension.

OP-53

IN SILICO STRUCTURE BASED DRUG DESIGN ON ALK PROTEIN IN LUNG CANCER**Arthi Rashmi, Vasanth Nirmal Bosco K. Priyanka, Bhuvaneshwari and Sachin**

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The in silico methods for drug discovery are becoming increasingly powerful and useful, that in combination with increasing computer processor power. Lung Cancer is the leading cause of cancer associated deaths, worldwide and has one of the poorest prognoses among all cancer types. ALK (Anaplastic Lymphoma Kinase) proteins play a vital role in deactivating the apoptosis process in cancer disease. In this study, ligand-based drug design were employed to design novel ALK inhibitors from *Gloriosasuperba* found in Asia. ALK

structure model was taken from PDB. A phytochemicals of *Gloriosasuperba*, *Dilleniaindica*, *Punicagranatum*, *Ocimumsantum* are analysed and optimized with the ARGUSLAB to investigate the interactions between the target compounds and the amino acid residues of the ALK protein. All the compound have shown the binding pose between - 6.54 and - 15.34. Out of 150 compounds Baccatin show best ligand energy -9.34 with 4 hydrogen bond of distance is 3.0.

OP-54

CLASSIFICATION OF DIABETIC RETINOPATHY PATIENTS USING BIOGEOGRAPHY BASED OPTIMIZATION ON SUPPORT VECTOR MACHINE (SVM) BASED ON DIGITAL RETINAL IMAGE**R. Adalarasan^a and R. Malathi^b**

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Diabetic retinopathy is a type of eye disease characterized by retinal damage brought on by diabetes, and is the leading cause of blindness in people aged between 20 to 64 years. Image processing techniques are used to detect and classify retinopathy images effectively. In this paper, it is proposed a computer approach for the detection of diabetic retinopathy stage using color fundus images. The features are extracted from the fundus images using the image processing techniques, object classification and then fed to the Support Vector Machine (SVM) which automatically detects the blood vessels as normal or abnormal. The performance of the SVM method is compared with

Naïve Bayes (NB) algorithm and Biogeography Based Optimization (BBO) based SVM. The BBO algorithm has been proposed with the code generation methods in the present study to improve the binarization process. The generated code matrix is the best for a given problem because it is designed taking into account the features of the code matrix such as overall classifier accuracy, minimum hamming distance and margin of classification, and the features of the problem such as attributes, samples and classes. The generated multiple binary classes were classified using standard SVM. It is observed that BBO based SVM outperforms the SVM and NB method of classification.

OP-55

STOCHASTIC MODELLING FOR BMI AND THE PREVALENCE OF HYPERTENSION IN SCHOOL CHILDREN**M. Raja, K. Senthamarai Kannan and V. Deneshkumar**

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Hypertension has emerged as an important public health concern in India. It is also known as high blood pressure and is a long term medical condition in which the blood pressure in the arteries is persistently elevated. Several studies across the globe and in India demonstrated a high prevalence and rising trends of hypertension, overweight and obesity in school children. These conditions were also found to create tremendous burden on children, putting them at risk of its detrimental effects. The stochastic model has been proposed to study the

association of hypertension and obesity with the various risk factors.

OP-56

ROBUST REGRESSION METHODS FOR DETECTION OF OUTLIERS**G. Sampath and K. Senthamarai Kannan**

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Multiple regressions routinely assess the degree of relationship between one dependent variable and a set of independent variables. The Ordinary Least Squares (OLS) Estimator is most popularly used to estimate the parameters of regression model. Robust regression approach can provide estimates useful even if a dataset is contaminated with outliers. When outliers present in the

data set, robust estimators like M, MM and LTS Estimators are preferred to estimate the parameters of regression model. In this study M, MM and LTS Estimators are used for the HBA1C level data for constructing the Robust regression model and three methods are compared to each other estimators.

OP-57

BAYESIAN STRUCTURAL EQUATION MODELING FOR THE FACTORS AFFECTING RURAL HEALTH INDEX**K. Senthamarai Kannan and V. Sathiya**

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Rural Health is an important aspect of India's development vision as envisaged by the National Rural Health Mission. Several factors affecting rural health are captured in a structural equation model of rural health index. Three main categories of causes namely access, awareness and personal habits are identified. Bayesian analysis is used to test the hypothesis and solve the model. The Gibbs sampler algorithm is used in the implementation of Bayesian modeling. District wise data on health factors and indicators are used. The data is a part of the District Level-IV on all the districts of India.

Several factors of rural health index to morbidity, anemia, blood sugar, chronic disease, hypertension such as access to health facilities, safe drinking water, sanitation, awareness of health issues and personal habits are studied. A simple model is constructed to provide valuable insight into identifying effective thrust areas in health policy. The rural health index is observed to be greatly dependent on access to basic health facilities, toilets and safe drinking water. The importance of the awareness about Asthma and its first aid is also brought out in this study.

OP-58

AN APPLICATION OF POISSON REGRESSION MODEL FOR LUNG CANCER**S. K. Senthamarai Kannan and M. Velusamy**

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Cancer is a major life risk disease in the world. Chewing and smoking tobacco products are the principal risk factor for causation of lung cancer for males. Poisson regression model for time trends of mortality to detect the long-term effects of common levels of smoking and lung cancer, in which the adjustment for cigarette smoking is not always necessary. The major hypothesis to be tested in the model is that if the long-term and common-level smoking had an effect on lung cancer. The death rate from lung cancer could be expected to increase gradually at a higher rate in the region with relatively high levels of smoking than in the region with low levels, and that this trend would not be expected for other diseases. Using this approach, we analyzed the trend of mortality in males for lung cancer of the India. Our analysis supported the existence of long-term effects

of smoking causes lung cancer. The well documented urban/rural difference in lung cancer incidence and the detection of known carcinogens in the atmosphere have produced the hypothesis that long term smoking may have an effect on lung cancer.

OP-59

MARKOV CHAIN MODELLING FOR MEDICAL DATA**S. Gothai Nachiyar, K. Senthamarai Kannan, M. Raja.**

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In peoples analyses the blood pressure of patients is very useful to assess the hypertension, especially working in IT related field. The motivation of this paper is to correlate the high rate of cardiac problems and other illness due to the hypertension in modern life. A

stochastic modeling adopted for confirming the results. Markov chain modelling approach may be useful for clinical decision making, and also for the design of clinical trials, which are presented numerically and graphically.

OP-60

SEASONAL ARTIFICIAL NEURAL NETWORKS AND STOCHASTIC MODELLING FOR THE PREDICTION OF DIABETES IN INDIA**S.M. Karthik and P. Arumugam**

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Stochastic modelling for the prediction of diabetes levels with machine learning is dealt within this paper. Diabetes is non-communicable disease and affects the survival of all living things. Accurate forecasting of diabetes is essential for the proper planning and execution of future activities. Stochastic modelling have been widely used to time series prediction. This work presents a stochastic model for the diabetes prediction in India. Stochastic

modelling based on Markov chains are used in this work. Second order Markov chain yields better results than first order. Seasonal Artificial Neural Networks (SANN) gives accurate prediction of the future diabetes level and determination of the prediction of diabetes levels. The predicted results obtained showed the surpassing performance of the second order Markov chain and Seasonal Artificial Neural Networks.

OP-61

RISK FACTOR ANALYSIS FOR NON-COMMUNICABLE DISEASES**A. Mohamed Ashik and K. Senthamarai Kannan**

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The major types of NCDs are cardiovascular, cancer, chronic respiratory, and diabetes. NCDs kill 40 million people each year, equivalent to 70% of all deaths globally. In this paper, Non-Communicable Disease-associated risk factors of blood pressure, body mass index, and cholesterol are analyzed and evaluated. The 100 observed data was used for both genders. Statistical tools are applied and monitoring of separate gender.

From the results, it can be observed BMI, BP, and Cholesterol have statistical relationship. Then waist-hip ratio, low-density lipoprotein, high-density lipoprotein, systolic blood pressure and diastolic blood pressure of statistical graphs trend using SPSS software package was classified. The female gender is more prove to other non-communicable diseases.

OP-62

OUTLIER DETECTION IN LINEAR REGRESSION MODEL USING RESIDUAL ANALYSIS**S. Stephen Raj¹ and K. Senthamarai Kannan²**

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Linear regression is a statistical tool for modeling the relationship between dependent variable and one or more independent variables. Outlier detection methods have been used to detect and remove anomalous values from data. In simple linear regression outliers can be detected based on residual analyses, residual plots and scalar measures of influence statistics. Residuals have an

important role in estimating and testing the significance of parameters in a linear regression model. In this paper, we detect the presence of outliers in simple linear regression models based on residual analyses such as standardized residuals, studentised residuals, jackknife residuals, predicted residuals and weighted residuals. The main objective of the paper is to compare the effects

of different residual analysis for the detection of outliers in the simple linear regression model. By removing the influential points from the data set, it will lead to a different model. The effect of the case can be studied by

deleting the particular case from the data and analyzing the rest of the population. We can check our model adequacy by the summary statistics such as t or F statistics or R^2 .

OP-63

MITIGATING EFFICACY OF *CARALLUMA ATTENUATA* AGAINST ANTITUBERCULOSIS DRUG, RIFAMPICIN INDUCED LIVER INJURY IN MALE ALBINO WISTAR RATS

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Liver, the most versatile but complex internal organ, plays a vital role in metabolic activities in human body. Its importance also lies in its impetus in management of internal environment and biochemical conversion of endogenous and exogenous chemicals to harmless and excretable compounds. Therefore, being a vital organ, its protection has a special status in therapeutics. Liver is the main organ involved in the metabolism of biological toxins and medicinal agents. Such agents are always associated with the disturbance of hepatocytes. The plant *Caralluma attenuata* is a succulent plant from India. Traditionally, Indian tribes chewed chunks of *Caralluma attenuata* to keep from being hungry during a long hunt. The present study was undertaken to scientifically prove the traditional use of the *Caralluma attenuata* against rifampicin induced liver injury. The mitigating efficacy of *Caralluma attenuata* on liver damage was evaluated by antituberculosis drug, rifampicin induced hepatotoxicity in rats. Male albino wistar rats were orally treated with chloroform, ethylacetate and methanol fractions of *Caralluma attenuata* (each 200 mg/kg body weight) or silymarin (25 mg/kg) daily with administration of rifampicin (1 gm/kg body weight- po) only one day.

Rifampicin induced liver damage showed significantly increased the activities of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), lactate dehydrogenase (LDH), gamma glutamyl transpeptidase (GGT) and bilirubin whereas protein level was decreased and histological observation of liver showed necrosis, vacuolization, aggregation of nucleus and space formation as compared with control. Oral administration of chloroform, ethylacetate and methanol fractions of *Caralluma attenuata* or silymarin consecutively for twenty eight days to rifampicin induced hepatotoxic rats showed significantly decreased the elevated activities of AST, ALT, ALP, LDH, GGT and bilirubin level where as enhance the level of protein in serum and normal histoarchitectural pattern of liver was observed when compared with rifampicin alone treated rats and the maximum effect was found to be ethylacetate fraction of *Caralluma attenuata*. Thus the present study ascertains that the *Caralluma attenuata* ethylacetate fraction possesses significant antihepatotoxic efficacy against rifampicin induced liver injury.

OP-64

PROTECTIVE EFFECT OF BLACK TEA EXTRACTS AGAINST ALUMINIUM CHLORIDE-INDUCED ALZHEIMER'S DISEASE IN RATS: A BEHAVIOURAL, BIOCHEMICAL AND MOLECULAR APPROACH

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Aluminium is reported to play an important role in the aetiology, pathogenesis and development of Alzheimer's disease (AD). Black tea (BT, *Camelliasinensis*, family – Theaceae) represents approximately 78% of total consumed tea in the world and possesses neuroprotective properties under conditions like hypoxia, ischaemia and Parkinson's disease. This research aimed to evaluate neuroprotective effect of black tea extract (BTE) on the cognitive deficits, activity of acetylcholinesterase (AChE), levels and activities of oxidant-antioxidant indices (thiobarbituric acid reactive substances (TBARS), reduced glutathione (GSH), superoxide dismutase (SOD), catalase and glutathione peroxidase

(GPx)), expressions of β amyloid 1–42 ($A\beta$ 1–42) synthesis related (amyloid precursor protein (APP), β and γ secretases) and apoptotic markers (Bax, Bcl-2, cyto c, caspases 3, 8 and 9) in hippocampus and cortex of aluminium chloride ($AlCl_3$) induced AD rats. Chronic $AlCl_3$ administration (100 mg/kg body weight i.p.) in Wistar rats for 60 days significantly enhanced the AChE activity, memory impairment, oxidative damage, $A\beta$ burden and apoptosis markers. Coadministration of BTE to $AlCl_3$ rats for 60 days significantly ameliorated the aluminium induced pathological changes. Thus, it is suggested that the anti-Alzheimer role of BTE may be

attributed mainly to the active components present in black tea.

OP-65

EVALUATION OF ANTICANCER EFFICIENCY OF GOLD NANOPARTICLES ON RENAL CARCINOMA CELL LINES

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Nanoscience has been established recently as a new inter-disciplinary science. Metallic nanoparticles exhibit size and shape-dependent properties that are of interest for applications ranging from catalysts and sensing to optics, antibacterial activity. Among the variety of materials, interest in gold nanoparticles (AuNPs) has grown exponentially in the past decades, due to the unique properties of AuNPs. It exhibit attractive physico-chemical properties, which have been exploited for oncological therapies are of particular interest, especially these that rely on the targeted delivery of the active substances combined with AuNPs directly to cancer

cells. In the present investigation the anticancer activity of AuNPs was studied against renal carcinoma cell lines (ACHN). Nanoparticle treatment has showed significantly decreased % cell viability in a concentration dependent manner. The IC₅₀ value for AuNPs on ACHN cells was found to be 20µg/ml. The IC₅₀ values of cells treated with AuNPs for 24 hours revealed that the cells became rounded, shrink, and lost their contact with neighbouring cells. This was compared with standard chemotherapeutic drug cisplatin. Both cisplatin and gold nanoparticles induces the cell death at 20 µg/ml concentration.

OP-66

PREVALENCE OF THYROID DYSFUNCTION IN END STAGE RENAL DISEASE

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The present study was aimed to study the prevalence of thyroid dysfunction in End stage renal disease. The data was collected from the patients reported to dialysis unit. 30 patients who had undergone hemodialysis were followed up. A patient with chronic kidney disease was confirmed by imaging and creatinine clearance. Patients on thyroid replacement, anti thyroid drugs, steroid and hormone therapy were excluded in this study. From the study, incidence of thyroid dysfunction was found to be more in the age group of 40-50 years of age. In our

study, 30% of the patients were found to have hypothyroidism. Among them, clinical features and investigations revealed 2 patients with clinical hypothyroidism and 7 patients with subclinical hypothyroidism. No incidence of hyperthyroidism were found in this study. In summary, the present study finds hypothyroidism to be very common in patients with end stage renal disease and reveals the significant association between chronic kidney disease and thyroid dysfunction.

OP-67

STUDY OF BIOCHEMICAL PROFILE OF PATIENTS WITH METABOLIC SYNDROME ADMITTED TO RURAL TEACHING TERTIARY CARE HOSPITAL

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Reader in Department of Medicine.

To study the biochemical profiles of patients with metabolic syndrome those were admitted to rural teaching tertiary care hospital. 100 patients admitted in medicine wards from May 2017 to august 2017 in RMMC&H were studied and categorized based on the NCEP-ATP III criteria for metabolic syndrome after applying exclusion criteria. Waist circumference, fasting lipid profile, blood sugar levels, blood pressure were taken and the risk factors and comorbidities of metabolic

syndrome were studied. In this study it is found that metabolic syndrome is more prevalent in males. Smoking and alcohol consumption which if combined together are important risk factors accounting 46%, patients with sedentary life style and non vegetarian diet gives the risk of metabolic syndrome of about 52% in males and 42% in females. Patient with known diabetes of duration of about 6 – 10 years are more affected. 78% of the patients fall within the overweight category of

BMI. Patients who are hypertensive along with coronary artery disease have a incidence of 47%. 77% Patients having dyslipidemia are having an increased risk for developing metabolic syndrome. By this study, it is clear

that keeping the BMI under normal levels, with average physical activity and maintaining the blood sugar, lipids and blood pressure within normal, limit the risk of getting metabolic syndrome.

OP-68

RECUPERATIVE EFFECTS OF *VITEX NEGUNDO* LEAF EXTRACT AGAINST METHIMAZOLE INDUCED HYPOTHYROIDISM IN ALBINO WISTAR RATS

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Hypothyroidism is a condition of underactive thyroid which if untreated leads to many metabolic complications. Methimazole, an antithyroid drug, on extended usage causes hypothyroidism. In this study, we explored the efficacy of *Vitex negundo* leaves ethanolic extract (VNE) in treating hypothyroidism. Adult female albino Wistar rats weighing 160 - 200g were divided into 4 groups. Group I served as a control group (normal rats). Group II served as disease-control, hypothyroidism induced by methimazole (4mg/kg B.W) for 15 days. Group III was treated by VNE (100mg/kg B.W respectively) and group IV received levothyroxine as a standard drug (100µg/kg B.W) for 30 days via oral

intubation. Significant increase in TSH and decrease in T₃ and T₄ levels and increased levels of liver marker enzymes (AST, ALT, ALP), triglyceride, cholesterol and decreased level of antioxidants and urea were observed in disease-control group. When compared to disease-control rats, administration of VNE decreased the levels of TSH and improved T₃ and T₄ secretion. It also restored the levels of liver marker enzymes, antioxidant levels, urea, triglyceride and cholesterol near to the standard drug group. These results prove that the administration of VNE to hypothyroid induced rats restored the normal functioning of the thyroid gland.

OP-69

ANTIOXIDANT AND LIPID PEROXIDATIVE EFFECT OF SEAWEED, *SARGASSUM WIGHTII* ON STREPTOZOTOCIN INDUCED DIABETICS IN MALE ALBINO WISTAR RATS

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Traditionally, seaweeds have been consumed as food in many parts of the world especially among Asian coastal communities. Antioxidants found in many algae are important bioactive compounds that play a major role against various diseases through protection of cells from oxidative damage. Seaweeds contain alkaloids, phenols, flavonoids, saponins, steroids, polyunsaturated fatty acids, minerals, certain vitamins and appreciable amounts of polyphenols which are effective antioxidants and may have particular biological activities. These compounds participate extensively in defence against diseases, microorganism and stress. *Sargassum wightii* is one of the important species belonging to the genus *Sargassum* and a wide range of bioactive properties. It is widely distributed on the southern coasts of Tamilnadu, India and many parts of Asia and it is reported to be used as animal feed, food ingredients and fertilizer. *Sargassum wightii* shows a good amount of flavonoids in support of its antioxidant activity. Diabetes mellitus is a metabolic disorder characterized by hyperglycemia that results from absolute or relative deficiency of insulin secretion, impaired insulin action, or both. The present

study was undertaken to investigate the action of methanolic extract of *Sargassum wightii* on streptozotocin induced diabetics in male albino wistar rats. Streptozotocin induced diabetic rats (45 mg/kg ip) were treated with methanolic extract of *Sargassum wightii* at the dose of 300 mg/kg, p.o. and its influence on superoxide dismutase (SOD), catalase (CAT), reduced glutathione (GSH), glutathione peroxidase (GPx), vitamin C, E and lipid peroxidation (TBARS). Oral administration of methanolic extract of *Sargassum wightii* (300 mg/kg, p.o) to streptozotocin induced diabetic rats showed significantly increased the SOD, CAT, GSH, vitamin C and E where as TBARS levels were significantly decreased in liver. Hence, it can be concluded that methanolic extract of *Sargassum wightii* enhance the antioxidant activity and minimized the stress in the streptozotocin induced diabetics in rats.

OP-70**STUDY OF THE RATIONALITY OF PRESCRIPTION PATTERN OF DRUGS FOR PATIENTS WITH CKD ON DIALYSIS & THEIR CO-MORBID CONDITIONS IN THE DIALYSIS UNIT AT A TERTIARY CARE TEACHING HOSPITAL.****M. Punidha Kavya**

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Aim was to study the rationality of the prescribing pattern of drugs for patients with chronic kidney disease (CKD) on dialysis and their Co-morbid conditions in the dialysis unit at a Tertiary Care Teaching Hospital. a). To ascertain the sex & age susceptibility of CKD. b). To interpret the Co-morbidity of CKD. c). To assess the rationality of the prescription pattern. A prospective observational study was made in and around a period of 1 month (August 2017) in the dialysis unit of medicine department, at Rajah Muthaih Medical College and Hospital, Chidambaram, A Tertiary Care Teaching Hospital. The prevalence of the disease is high in men compared to women. Highest number of patients was

seen in the age group of 58-67 years. Hypertension was the most common co-morbidity observed followed by anaemia and Type2 diabetes mellitus. Polypharmacy was seen in all the patients. Medications prescribed for cardiovascular diseases encounters the highest number of drugs for the prescription followed by nutritional supplements & drugs for gastro-intestinal system. Various other drugs prescribed include antibiotics, anti-platelets, anti-diabetics and Phosphate binders. The study has figured out the sex & age susceptibility of patients with CKD on dialysis. The Co-morbid conditions of CKD have been ascertained. The assessment of rationality of the prescription has also been done.

OP-71**ROLE OF KAYAKARPAM IN THE MANAGEMENT OF NON-COMMUNICABLE DISEASES (NCD) - A SIDDHA LITERATURE REVIEW****R. Rathinamala, A. Rajendra Kumar**

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Non-communicable diseases, primarily cardiovascular diseases, cancers, chronic respiratory diseases and diabetes are responsible for 63% of all deaths worldwide. As per World Health Organization, NCD deaths will increase by 17% over the next ten years. Researchers suggest that antioxidant therapy represents a promising avenue for managing NCDs. Siddha medicines are natural products derived from plants, minerals and animals. Kayakarpam is a transformative approach, which is strongly advocated by Siddhars for rejuvenation, longevity and elimination of disease causing factors. Besides rejuvenating the body, Kayakarpam also possess prophylactic action. Present review is done to highlight the Kayakarpam drugs

specified in classical Siddha literature and to explore their scientific values. The types of Kayakarpam, their sources, administrating method, period of intake and their disease specification in classical Siddha literature are searched in detail. The scientific backgrounds of the Kayakarpa medicines are also explored. Hence, it is concluded that the Kayakarpa drugs of Siddha medicine has potent antioxidant activity and most of the Kayakarpa medicines are yet to be explored further for their precise action. If future researches are taken up on the basis of Classical Siddha literatures, it will pave way for identifying potent antioxidants for combating non-communicable diseases thereby decreasing the disease burden by larger means.

OP-72**GAS CHROMATOGRAPHY-MASS SPECTROMETRY ANALYSIS, IN VITRO CYTOTOXIC AND ANTIOXIDANT EFFICACY STUDIES ON CLEOME GYNANDRA L. (LEAVES): A TRADITIONAL DRUG SOURCE****Renuka Saravanan, Brindha Pemaiah, Mahesh Narayanan, Sivakumar Ramalingam**

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This study was aimed to assess the phytoconstituents, cytotoxic, and antioxidant efficacy of ethyl extract of Cleome gynandra leaves. Qualitative phytochemical analysis with different solvent extracts was performed. Quantitative and gas chromatography-mass spectrometry

(GC-MS) analysis of the extract was performed with ethyl acetate extract. The cytotoxic effect of the ethyl acetate extract was determined by 3-[4,5-dimethylthiazol-2-yl]2,5-diphenyltetrazolium bromide (MTT) assay on Michigan Cancer Foundation-7 (MCF-

7) cells using taxol as standard and free radical scavenging ability using 1,1-diphenyl-2-picrylhydrazyl (DPPH). Leaves extracts with different solvents revealed the presence of alkaloids, cardiac glycosides, flavonoids, phenols, and tannins. GC-MS analysis of ethyl acetate of the plant leaves showed the presence of n-hexadecanoic acid. The IC₅₀ value of the ethyl acetate extract was

found to be 90.2 µg/ml on MCF-7 cell line, and the extract was found to possess significant DPPH free radical scavenging activity. From the results, we conclude that the *C. gynandra* extract possesses antioxidant and antiproliferating activity against MCF-7 cells.

OP-73

NEUROPROTECTIVE EFFECT OF SESAMOL ON ROTENONE-INDUCED MODEL OF PARKINSON'S DISEASE IN C6 ASTROCYTES AND RAT BRAIN

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Aim was to investigate the neuroprotective effect of sesamol against rotenone-induced model of Parkinson's disease in C6 astrocytes and rat brain. C6 cells were incubated with rotenone and sesamol at different concentrations. Cell viability was determined by MTT assay. The reactive oxygen species, mitochondrial membrane potential and nuclear morphology were determined by dichlorofluoresceindiacetate, rhodamine 123 and 4', 6- diamidino-2- phenylindole, respectively. Experiments were carried out for 60 days in male Wistar albino rats (n= 6: I- vehicle control, II- rotenone, III- rotenone + sesamol, IV- rotenone + sesamol + L-DOPA, V- rotenone + L-DOPA). Histopathology of brain and

the neurotransmitter dopamine in brain were investigated. Sesamol significantly increased the cell viability in rotenone-induced C6 cells. Sesamol ameliorated the rotenone-induced reactive oxygen species generation, loss of mitochondrial membrane potential and nuclear damage. Histopathological evidences of brain revealed that sesamol attenuated the brain injury and also restored the neurotransmitter dopamine in brain caused by rotenone. The results strongly indicate the promising role of sesamol against rotenone in both C6 cells and rat model. Hence, sesamol can be helpful in the management of Parkinson's disease.

OP-74

A CLINICAL STUDY OF STRESS INDUCED HYPERGLYCEMIA OF NON DIABETIC INDIVIDUAL WITH ACUTE ISCHEMIC STROKE AND ITS SHORT TERM PROGNOSTIC SIGNIFICANCE

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Aim was to study the clinical profile and clinical outcome of cerebral infarction in relation to glycemic status on presentation. 50 subjects admitted to the department of medicine, Rajahmuthiah medical college and hospital, Chidambaram with acute ischemic stroke were selected after applying exclusion criteria. All cases were subjected to detailed history taking and clinical examination and then clinical diagnosis was arrived. The severity of stroke in each patient calculated based on the NIH stroke scale. Investigations including CT Brain

plain, random blood sugar within 24 hours of admission, fasting and post prandial blood sugar, HBA1C, complete blood count, urine routine, ECG and fasting lipid profile was done. Among the study group, those who had blood glucose value less than 180mg/dl at their admission showed better clinical outcome during the course of stay in the hospital. Our study found that the tight glycemic control during the admission of acute ischemic stroke in non-diabetic individuals associated with good short term prognostic significance.

OP-75

CANCER CHEMOTHERAPY BY USING MEDICINAL PLANTS

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Cancer is the second leading causes of death worldwide. Although great advancement have been made in the treatment and control of cancer progression, significant increase in annual incidence still was continuing. A

number of undesired side effects sometimes occur during chemotherapy. Natural therapies such as use of plant – derived products in cancer treatment may reduce adverse side effects. However a myriad of plant products have

shown very promising anticancer properties *in vitro*, but have yet to be evaluated *in vivo*. This presentation may focus on various plants-derived chemical compounds

which shown promising anti cancer properties and which have their potential mechanism of action as well.

OP-76

PHARMACOPHORE MODELING, 3D-QSAR AND MOLECULAR DOCKING STUDIES TO DISCOVER NEW FIBROBLAST GROWTH FACTOR INHIBITORS TO TREAT CANCER

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The signalling pathway of fibroblast growth factor/fibroblast growth factor receptor (FGF/FGFR) is playing a pivotal role in cell proliferation, angiogenesis, migration and survival. The dysfunction of FGFRs leads to several types of malignancies and health disorders. The mutation of FGFR has been identified in cancers of breast, bladder, prostate, endometrial and lung, as well as hematological malignancies. Hence, FGFRs has been considered as an attractive target for novel small molecule anticancer drug. The pharmacophore modeling and the atom-based 3D-QSAR studies were carried out with the known fibroblast growth factor inhibitors preferred from the binding database. Using PHASE

algorithm, a five-feature pharmacophore model was developed to derive a predictive ligand-based statistically significant 3D-QSAR model. The best pharmacophore model was chosen and validated externally by predicting the activity of test set molecules. The chosen lead pharmacophore model was used to screen the hit molecules from the National Cancer Institute (NCI) and ZINC and Maybridge database. The hit molecules obtained were further filtered using molecular docking and predicted the ADME properties. Finally 9 distinct drug-like molecules were identified as fibroblast growth factor inhibitors to treat cancer.

OP-77

IS PERIODONTAL HEALTH A HARBINGER FOR GASTRIC CARCINOMA?

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Periodontitis is an inflammatory disease of the supporting tissues of the teeth resulting in tissue destruction, pocket formation and bone loss. *H.pylori* infections are acquired by ingestion and are implicated with gastric ulcers, peptic ulcers and gastric carcinoma. To investigate the correlation between the presence of *H.pylori* in the plaque samples of chronic periodontitis (CP) patients and peptic ulcer (PU). Study involved 100 patients attending services of RMMCH in 4 groups i) CP -, PU -. ii) CP-, PU + iii) CP +, PU - iv) CP +, PU + with 25 patients each. The supra and subgingival plaque samples were studied for the presence of *H.pylori* by

Gram stain, rapid urease test and culture. Colonies were confirmed by standard biochemical tests. Statistical analysis employed SYSTAT 12 software system and Mannwhitney U test and Cramers test were used for data analysis. *H.pylori* was detected in 54.2% of patients with chronic periodontitis and peptic ulcer. An association between chronic periodontitis and *H. pylori* was observed among 95.8% of patients and that of peptic ulcer and *H.pylori* was noted among 58.3% of patients. The periodontal health status had a direct association with the presence of *H.pylori* and peptic ulcer hence laying them vulnerable to gastric carcinomas.

OP-78

VITAMIN D3 SUPPLEMENTATION IN CHRONIC PERIODONTITIS PATIENTS WITH TYPE 2 DIABETES MELLITUS-AN EXPERIMENTAL STUDY

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Chronic periodontitis is an inflammatory disease, and is characterized by the loss of periodontal attachment leading to tooth loss. Incidence of periodontitis is approximately one in 4 adults. Periodontal disease has now been recognized as

the sixth complication of Diabetes. The control of periodontitis has an impact on improvement of glycemic control in diabetic patients and vice versa. Recent data suggested that Vitamin D deficiency may play a role both in periodontal disease and in type 2

diabetes mellitus and may create an environment conducive for the progression of chronic diseases. The objective of the study is to assess the periodontal status, glycemic status the levels of serum vitamin D and gingival crevicular fluid osteocalcin level, before and after vitamin D3 supplementation. Also aim is to assess

whether there is any significant improvement in periodontal parameters due to scaling and root planning alone or along with vitamin D supplementation. If Vitamin D supplementation may be used as an adjunct to periodontal therapy.

OP-79

EVALUATION OF ANTIOXIDANT AND HEPATOPROTECTIVE POTENTIAL OF ETHANOL LEAF EXTRACT OF *TRICOSANTHES CUMCUMERINA* IN PARACETAMOL INDUCED HEPATOTOXICITY ALBLNO WISTAR RATS

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Liver disease is a global health problem. *Tricosanthes cumcumerina* is a plant of the curcubitaceae family. *Tricosanthes cumcumerina* ethanolic leaf extract (TCELE) on qualitative analysis explored rich phytochemicals and high antioxidant potential was shown in invitro free radical (ABTS, DPPH) scavenging assay. The hepatoprotective effect of TCELE was studied in albino wistar rats*. The acute hepatotoxicity was induced in wister rats by using paracetamol

(500mg/kg.bw, single dose, p.o). The hepatoprotective effect of TCELE was assessed by analysing the status of liver and serum marker. Enzymes such as AST, ALP, ACP and LDH. Oxidative stress marker were analysed as well. The activities and levels of these biomarker were significantly altered in paracetamol treated rats, which was normalised after treatment with TCELE. The present study thus showed the hepatoprotective potential of TCELE.

OP-80

SODIUM ARSENITE-INDUCED MYOCARDIAL BRUISE IN RATS: AMELIORATIVE POTENTIAL OF DIALLYL TRISULFIDE VIA TGF-B/SMAD AND NRF/HO PATHWAYS

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Arsenic poisoning is a serious medical condition caused by consumption of contaminated food and water. Cardiovascular toxicity is one of the important risk factors associated with arsenic toxicity. To elucidate efficacy and possible mechanism of action of diallyl trisulfide in arsenic-induced cardiac toxicity in laboratory rats. Arsenic toxicity was induced in male Wistar rats by sodium arsenite (5 mg/ kg, p.o., 28 days). Rats were either concomitantly treated with vehicle (5 mL/kg, p.o.) or diallyl trisulfide (80 mg/kg, p.o.) for 28 days. Chronic administration of sodium arsenite caused significant alterations in electrocardiographic, hemodynamic and left ventricle contractile functions. Treatment with diallyl trisulfide significantly restored ($p < 0.05$) these altered myocardial functions. Administration of diallyl trisulfide significantly inhibited ($p < 0.05$) arsenite-induced increased cardiac markers (LDH, CK-MB, AST, ALT and ALP) and altered lipid metabolism (total cholesterol, triglyceride, LDL, HDL and VLDL). The elevated level of heart oxido-nitrosative stress and decreased cardiac $\text{Na}^+ - \text{K}^+$ -ATPase level after arsenite administration was significantly attenuated ($p < 0.05$) by diallyl trisulfide treatment. diallyl trisulfide also significantly increased ($p < 0.05$) myocardial mitochondrial enzymes (I-IV) activity. Arsenite-induced

alteration in heart Nrf-2, HO-1, Smad-3, and TGF-b mRNA expression were significantly restored ($p < 0.05$) by diallyl trisulfide treatment. Treatment with diallyl trisulfide significantly inhibited ($p < 0.05$) arsenite induced apoptosis revealed by immunoblotting analysis. Diallyl trisulfide administration reduced histopathological aberrations (measured using transmission electron microscopy) induced by sodium arsenite. The results of present investigation suggest that diallyl trisulfide ameliorates arsenite-induced cardiotoxicity via modulation of TGF- β /Smad-3 and Nrf-2/HO-1 pathways along with a reduction in myocardial apoptosis.

OP-81

INCREASED LEVELS OF INFLAMMATORY MARKER HSCRP, MDA AND LDL CHOLESTEROL IN HYPERTENSIVE SUBJECTS ON TREATMENT**M. Nakkeeran¹, S. Periasamy², K. Santha¹, S. Sethupathy¹, R. Inmozhi Sivakamasundari¹**¹Department Of Biochemistry, Rajah Muthiah Medical College.²Department Of General Medicine, Rajah Muthiah Medical College And Hospital, Annamalai University, Tamilnadu.

High sensitive C-reactive protein (hsCRP), a very sensitive marker of inflammation, which is synthesized in the liver and has been a widely-used biomarker for risk-stratifying in CVD. It is positively correlated with abdominal fat and closely correlated with increased risk of cardiovascular events and obesity had the predominant association with cytokine levels. Obesity induces systemic oxidative stress and causes dysregulation of adipocytokines and development of metabolic syndrome. In our study, we investigated hsCRP levels in non-obese hypertensive subjects on treatment and its relationship with oxidative stress and lipid profile. Patients with secondary hypertension, past history of stroke, coronary artery disease, myocardial infarction, and diabetes mellitus were excluded. Serum lipid profile thiobarbituric acid reactive substances and hsCRP were

estimated in these patients by standard procedures and the values were compared with healthy controls. Totally 160 subjects were included in the study. 115 subjects were considered as Hypertension with blood pressure >140/90mmHg and 45 as healthy controls after obtaining consent. There is significant difference in hsCRP levels between study groups, and hsCRP levels correlate with blood pressure. The level of MDA and hsCRP levels were significantly increased in hypertensive subjects compared to control group. Our study shows that even in non-obese hypertensive subjects there was significant increase of hsCRP, LDL Cholesterol. Hence elevated hsCRP levels in addition to lipid profile screening may be a valuable tool for prediction of CVD risk in hypertensive subjects.

OP-82

ASSOCIATION OF SERUM MMP-9 LEVELS WITH INSULIN RESISTANCE IN DIABETIC PATIENTS WITH FOOT ULCERS BEFORE AND AFTER SKIN GRAFTING**Prasannabalaji¹, G. Ashok swaminathan ², C. Subramaniam², S. Sethupathy¹**¹Department of Biochemistry, Rajah Muthiah Medical College.²Department of Surgery, Rajah Muthiah Medical College And Hospital, Annamalai University, Tamilnadu.

Foot ulcers are dreaded complication of diabetes mellitus and a major cause for lower limb amputations. Diabetic foot is characterized by a pronounced inflammatory reaction, decreased collagen content. The ratio of biosynthesis and degradation of collagen are crucial in wound healing. A high matrix metalloproteinase-9(MMP-9) / tissue inhibitor of metalloproteinase-1 (TIMP1) ratio is associated with poor ulcer healing. An increase in the MMP9/TIMP1 ratio in infected diabetic foot ulcers may induce a decrease in vascular endothelial growth factor (VEGF) expression. MMP substrate redundancy permits another MMP to substitute for MMP-9 during normal wound healing. Under the hypoxic and inflammatory environment of diabetic wounds, increased reactive oxygen species (ROS) and up-regulation of MMP-9 results in poor wound healing. Insulin resistance primarily leads to a proinflammatory state, marked by exorbitantly elevated levels of MMP-9. Hence the association of hyperglycemia and insulin resistance with MMP-9 level in diabetic foot ulcers has been studied. Eight patients with diabetic foot ulcers without any other complications, for duration of more than six months about to undergo skin grafting were selected for the study. All the patients were on oral hypoglycemic agents.

Clinical parameters, serum MMP-9, Insulin resistance indices (fasting insulin, HOMA-IR), HsCRP, FRAP, TBARS were assessed. Elevated MMP 9 levels had positive correlation with hyperinsulinemia and insulin resistance during the course of treatment of diabetic foot ulcers. It is concluded that MMP 9 levels positively correlated with insulin levels in patients with diabetic foot ulcers and monitoring MMP 9 levels might give an idea about wound status.

OP-83

MANAGEMENT OF SCHIZOPHRENIA: A CASE STUDY ICD 10

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Schizophrenia is a condition of severe and chronic brain disorder in which a person interprets actual reality abnormally. A patient with schizophrenia has tendencies of delusions, hallucinations, disorganized thinking and retreat from reality. In this study, patient was prescribed with haloperidol and promethazine. The therapy

exhibited low rate of efficacy and later developed extrapyramidal symptoms. It is then replaced with Olanzapine, which shows better efficacy rate and low rate of ADR risk. The study concludes that Olanzapine could be a better choice.

OP-84

AMELIORATING EFFICACY OF *INDIGOFERA TINCTORIA* ON ALLOXAN INDUCED DIABETIC IN MALE ALBINO WISTAR RATSS. Senthilmurugan¹, M. Rajakani¹, V. Kurinji², K. Sathiyabama¹ and M. Muthulingam¹¹Department of Zoology, Faculty of Science, Annamalai University, Annamalainagar.²Department of Biotechnology, Dayananda Sagar College, Bangalore.

Diabetes mellitus is a serious complex chronic condition and is characterized by hyperglycemia due to disturbances of carbohydrate, protein and fat metabolisms. Besides hyperglycemia, several other factors including dyslipidemia or hyperlipidemia are involved in the development of micro and macrovascular complications of diabetes, which are the major causes of morbidity and mortality. Evaluation of plant products to treat diabetes mellitus is of growing interest as they contain many bioactive substances with therapeutic potential. *Indigofera tinctoria* is a widely distributed small erect medicinal shrub belonging to the family of Fabaceae, found throughout India. The plant contains compounds like alkaloids, glycosides, volatile oils, tannins, saponins, flavonoids. These compounds are responsible for antidiabetic effects. The present study was undertaken to investigate the action of aqueous extract of *Indigofera tinctoria* on alloxan induced diabetes in male albino wistar rats. Alloxan induced

diabetic rats (150 mg/kg ip only one dose) were treated with aqueous extract of *Indigofera tinctoria* at the doses of 125, 250 and 500 mg/kg, p.o. and its influence on serum glucose level, insulin, hemoglobin, glycosylated hemoglobin, glucose-6-phosphatase and fructose-1, 6-bisphosphatase were observed. Oral administration of aqueous extract of *Indigofera tinctoria* (125, 250 and 500 mg/kg) to alloxan induced diabetic rats significantly decreased the plasma glucose, glycosylated hemoglobin, glucose-6-phosphatase and fructose-1, 6-bisphosphatase and increased plasma insulin and hemoglobin levels. The maximum antidiabetic effect was observed against alloxan induced diabetic alterations with the 500 mg/kg body weight of aqueous extract of *Indigofera tinctoria*. Hence, it can be concluded that aqueous extract of *Indigofera tinctoria* have antidiabetic activity and it is able to ameliorate damages in the alloxan induced diabetes.

OP-85

RECOVERY OF BRAIN TISSUES BY THE INFLUENCE OF *TRIBULUSTERRESTRIS* IN MERCURIC CHLORIDE INTOXICATED MICEA. Margarat¹ and G. Jagadeesan²¹Chikkanna Government Arts and Science College, Tirupur – 641 602.²Department of Zoology, Faculty of Science, Annamalai University, Annamalainagar-608002.

The sub-lethal dose of mercuric chloride affects the brain tissues. A significant inhibition of acetyl choline esterase activity was observed in the brain tissues when exposed to mercuric chloride, which suggests that mercuric chloride blocked, neurotransmission in the respiratory center of the brain. *Tribulusterrestris* is one of the medicinal plants, which is very effective against mercuric chloride poisoned mice, *Mus musculus*. Ethyl

acetate extraction of *Tribulusterrestris* restored the mercury inhibited enzyme activity in the brain tissues.

OP-86

A STUDY ON SERUM MMP-9 LEVEL IN PATIENTS WITH ESSENTIAL HYPERTENSION ON TREATMENT

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Arterial hypertension causes changes in vascular wall structure and vascular remodeling, which leads to several complications such as hypertensive heart disease, aortic aneurysm, peripheral arterial disease, chronic kidney disease and retinopathy. Matrix metalloproteinase -9 (MMP-9) is a type IV gelatinase (Collagenase-B) plays a major role in extracellular matrix degradation and has been implicated as an important factor in atherosclerosis and vascular remodeling. They are also involved in numerous processes such as inflammation, fibrosis, angiogenesis and cell apoptosis. The activity of MMP-9 is tightly regulated by tissue inhibitors of matrix metalloproteinases (TIMPs). The balance between MMP9/TIMP1 is important for extracellular matrix protein turnover. Increased activity of MMP-9 is related

to the development and progression of cardiovascular complications. Several studies have reported that antihypertensive agents reduced serum MMP-9 activity. So the effect of antihypertensive agents on MMP-9 may decrease the risk of cardiovascular complications. In our study, we have observed that the patients on antihypertensive treatment showed significant increase of MMP-9 level in comparison with normotensive control subjects. In addition to that, they had significantly elevated hsCRP levels, indicating that low grade inflammatory process was continuing. To conclude that in addition to antihypertensive drugs, the inflammatory process should be controlled to prevent cardiovascular complications in hypertensive subjects.

OP-87

ROLE OF *SALACIA RETICULATA* (WIGHT) ON THIOACETAMIDE INDUCED HEPATOTOXICITY IN MALE ALBINO WISTAR RATSD. Veerakumar¹, M. Rajakani¹, Jana Anilkumar¹, M.Muthulingam¹ and S. Sethupathy²¹Department of Zoology, Faculty of Science, Annamalai University, Annamalainagar.²Department of Biochemistry, Faculty of Medicine, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalainagar.

Liver, the largest gland is a vital organ. It is the metabolic engine-room of the body. Almost all the drugs, foods and water constituents are metabolized and detoxified in the liver and as such it is often exposed to maladies resulting in a number of clinical syndromes. Many chemicals, foods, drugs and infections can cause variety of liver diseases such as hepatitis, jaundice, cirrhosis, liver cancer, etc. Liver has a pivotal role in regulation of physiological processes. It is involved in several vital functions such as metabolism, secretion and storage. Hepatobiliary diseases are the serious ailments and the medical treatment scenario is worsened day by day for lack of precise therapeutic regimens. There are many plants and their extracts that have been shown to possess hepato-protective activities. The present study was undertaken to scientifically prove the traditional use of the *Salacia reticulata* against liver disorders. The role of *Salacia reticulata* on liver damage was evaluated by thioacetamide induced hepatotoxicity in rats. Male albino wistar rats were orally treated with aqueous extract of *Salacia reticulata* (125, 250 and 500 mg/kg body weight) or silymarin (25 mg/kg) daily with administration of thioacetamide (400 mg/kg body weight- sc) only one day. Thioacetamide induced liver damage showed significantly increased the activities of alanine

aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), lactate dehydrogenase (LDH), gamma glutamyl transpeptidase (GGT) and bilirubin whereas protein level was decreased as compared with control. Oral administration of aqueous extract of *Salacia reticulata* or silymarin consecutively for twenty eight days to thioacetamide induced hepatotoxic rats showed significantly decreased the elevated activities of AST, ALT, ALP, LDH, GGT and bilirubin where as enhance the level of protein in serum was observed when compared with thioacetamide alone treated rats. Hence the study concluded that aqueous extract of *Salacia reticulata* has potential antihepatotoxic role.

OP-88

NUTRACEUTICALS – A PREVENTIVE AND THERAPEUTIC AGENTS FOR DIABETES

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Diabetes is a chronic metabolic disorder, where the body is unable to utilize carbohydrate due to absolute or relative lack of insulin, a hormone naturally produced by the β cell of the islets of Langerhans in pancreas. Nutraceuticals are generally products derived from food sources that provide extrahealth benefits, in addition to the basic nutritional value found in foods. Mostly these nutraceuticals are phytochemicals, which are derived from dietary or medicinal plants (soy bean, garlic, ginger, tea). The consumption of nutraceuticals may help

in preventing chronic disease, aging and also improves health condition and also improves life expectancy. Omega-3 fatty acids can promote insulin sensitivity and bring the blood sugar normal. Nutraceuticals have the capability to control diabetes. Nutraceuticals have significant promise in the promotion of human health and disease prevention. Increasing awareness levels about fitness health, are prompting the majority of people to lead, healthier lifestyles.

OP-89

EVALUATION OF ANTIOXIDANT AND ANTI-CANCER PROPERTIES OF HYDROXYCINNAMIC ACID ON DMBA INDUCED BUCCAL POUCH CARCINOGENESIS IN EXPERIMENTAL ANIMALS

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The anticancer properties of hydroxycinnamic acid (HCA) in 7,12-dimethylbenz[*a*]anthracene (DMBA)-induced hamster buccal pouch carcinogenesis was investigated in the present study. Oral squamous cell carcinoma was induced in the buccal pouches of golden Syrian hamsters by application of DMBA three times per week for 12 weeks. 40mg/kg body weight of the drug was given orally for the hamsters on the alternative days of the DMBA treatment. The lipid peroxidation by-products, was measured by the formation of thiobarbituric acid reactive substances (TBARS) and enzymatic antioxidants [superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx)], was

also analyzed in the buccal mucosa of DMBA-treated hamsters. The tumor incidence and volume was recorded. The histopathological tissue section of the hamster buccal pouch was analysed with HE staining. Our study thus suggests that HCA has significant chemopreventive and anti-oxidant potential in DMBA-induced oral carcinogenesis, probably by interfering with DMBA-induced abnormal cell proliferation in the buccal mucosa and also indicates that hydroxycinnamic acid modulates the activity of various antioxidant parameters and enhances the defense against reactive oxygen species-generated damage in buccal pouch carcinogenesis.

OP-90

PLANTAGOEROSA, AN EFFECTIVE MEDICINAL PLANT FOR HUMAN COLORECTAL CANCER

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Colorectal cancer is the 3rd most common cancer in the world and currently various medicinal plants are used for the treatment of cancer. *Plantagoerosa*, an ayurvedic plant that grows in Nilgiri district of Tamilnadu and widely found in regions where the temperature is low. Phytochemical analysis and anticancer activity was studied in the methanolic leaf extract of *Plantagoerosa*. The phytochemical studies revealed that flavanoid

contents were high in the methanolic extract of the plant that may lead to its anticancer activity. Quantitative analysis of the plant leaf extract was carried out to estimate the total phenolic and flavanoid content. Further, Gas Chromatography Mass Spectrometry (GC-MS) and High Performance Thin Layer Chromatography (HPTLC) studies were carried out to identify the compounds present in the methanolic extract of the plant

leaves. The components identified by GC-MS were flavones, phytol, pinene, benzopyran- 2-one, octadecadecanoic acid and eicosatrienoic acid. From HPTLC analysis three components were identified at 254nm, 366nm and 540nm. DNA fragmentation study was carried out to identify DNA damage caused by the leaf extract. MTT assay was carried out to study the viability percentage, cytotoxicity and anticancer effect of

methanolic leaf extract on human colorectal (HCT) cancer cell line. Various dose concentrations ($\mu\text{g/ml}$) of the leaf extract were tested (7.8, 15.5, 31.2, 62.5, 125, 250, 500 and 1000). Anticancer activity was seen from 250 $\mu\text{g/ml}$ to 1000 $\mu\text{g/ml}$ with 70% to 85% cell death. Further in vivo study is required to confirm the effect of plant extract to treat Human colorectal cancer.

OP-91

LUTEOLIN AND ITS ROLE IN NEUROPROTECTION

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Neurodegenerative diseases are characterized by protein aggregates, inflammation as well as oxidative stress in the central nervous system (CNS). Multiple biological processes are linked to neurodegenerative diseases such as depletion or insufficient synthesis of neurotransmitters, oxidative stress, and abnormal ubiquitination. Even though synthetic drugs are used for the management of Alzheimer's disease, Parkinson's disease, autism, and many other chronic illnesses, they are not without side effects. The attentions of researchers have been inclined towards the phytochemicals, many of which have minimal side effects. Luteolin belongs to the class of flavonoids and is isolated from the plant *Salvia*

fruticosa [synonym *Salvia triloba* (L.)] belonging to "Lamiaceae" family and dietary sources include celery, broccoli, green pepper, parsley, thyme, dandelion, carrots, olive oil, peppermint, rosemary, etc. It has many uses as a health supplement, due to its antioxidant properties and also have anti-inflammatory properties by inhibiting nuclear factor kappa B (NF- κ B) signaling in immune cells like microglia (resident macrophage cells) of the brain. Microglia exposed to luteolin shows a significant anti-inflammatory response like reduction in the synthesis of interleukin-6, which is used in cellular communication.

OP-92

EVALUATION OF IN-VITRO ANTICANCER ACTIVITY OF ETHANOL AND ETHYL ACETATE EXTRACTS OF *ALBIZIA SAMAN* FLOWERS

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Aim was to evaluate *in-vitro* anti-cancer activity on the MCF-7 cell line (Human breast cancer cell line) of *Albizia saman* (Family – Leguminosae) flower extract. The monolayer cells were detached with trypsin-ethylene diamine tetraacetic acid (EDTA) to make single cell suspension and viable cells were counted using a hemocytometer. The cell suspension was diluted with medium containing 5% FBS (Fetal Blood Serum) to obtain final density of 1×10^5 cells/ml. One hundred micro

liters per well of cell suspension were seeded into 96-well plates at plating density of 10,000 cells/well and incubated to allow for cell attachment at 37°C, 5% CO₂, 95% air and 100% relative humidity. The results obtained from the *invitro* studies performed using the breast cancer cell lines (MCF-7) reveals that the ethanolic flower extract of *Albizia saman* has a moderate anti-cancer activity.

OP-93

TUMOUR PREVENTIVE POTENTIAL OF ESCULETIN IN EXPERIMENTAL ORAL CARCINOGENESIS

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7,12-dimethylbenz(a)anthracene (DMBA) induced hamster buccal pouch carcinogenesis is a widely preferred experimental model to assess the tumour inhibiting efficacy of the medicinal plants or its

constituents. The present study explores the tumour inhibiting potential of esculetin by utilizing the status of lipid peroxidation by-products (TBARS) antioxidants (Vitamin E, reduced glutathione, SOD, CAT and GPx)

and detoxification agents as a biochemical end points as well as by using histopathological studies in DMBA induced hamster buccal pouch carcinogenesis. Oral tumours developed in the buccal pouch were subjected to histopathological studies and were conformed as oral squamous cell carcinoma. Hamsters treated with DMBA alone showed abnormal pattern of lipid peroxidation, antioxidants and detoxification agents in

the plasma and buccal mucosa as compared to control hamsters. The status of the above mentioned biochemical markers and histopathological abnormalities were found to be reversed in DMBA+ esculetin treated hamsters. The result of the present study thus explores the tumour preventive potential of esculetin in DMBA induced oral carcinogenesis.

OP-94

ADVERSE DRUG EFFECT

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Adverse effect is 'any undesirable or unintended consequence of drug administration'. It includes all kind of noxious effect i.e, Trivial; serious or even fatal. Adverse drug effect usually occurs at normal doses (treatment), and more often at overdoses or low doses. Adverse drug effect classification includes predictable reactions, unpredictable reactions, chronic

effects(continuous), delayed effects and end of treatment effects. Drugs frequently causing allergic reactions include quinolones, phenothiazines, ace inhibitors, methyldopa. Drugs can affect foetus in 3 stages which include, fertilization and implacentation [conception to 17 days], organogenesis:[18 to 55 days of gestation] and growth and development [56 days onwards].

OP-95

PERORAL FORMULATION STUDIES ON THE EFFECTS OF CYCLODEXTRINS AND SURFACTANTS IN ENHANCING THE SOLUBILITY, DISSOLUTION RATE AND BIOAVAILABILITY OF ANTI-DIABETIC DRUG

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Glimepiride is a widely prescribed antidiabetic drug, which belong to class II under BCS and exhibit low and variable peroral bioavailability due to their poor aqueous solubility. They are practically insoluble in water and aqueous fluids. As such oral absorption and dissolution rate are limited and they require enhancement in solubility and dissolution rate for increasing their oral bioavailability. Among the various approaches, complexation with cyclodextrin (CD) has gained good acceptance in recent years in industry for enhancing the solubility and dissolution rate of poorly soluble drug. Surfactants also increase the solubility of lipophilic water insoluble drug by micellar solubilization. In this present investigation cyclodextrins (β CD&HP β CD) and surfactants (SLS & Tween80) are tried to enhance the solubility dissolution rate and bioavailability of glimepiride. The major objective is to evaluate the (interaction) effect of cyclodextrins (β CD & HP β CD) and surfactants (SLS & Tween80) alone or in combination on the solubility dissolution rate and bioavailability of glimepiride in a series of 2²factorial experiments and to evaluate the feasibility of formulating glimepiride tablets. Also the pharmacokinetic evaluation of Glimepiride β CD& Glimepiride β CD-SLS complexes

in comparison with pure drug with view to evaluate their *in vivo* performance and to evaluate the stability of selected tablets formulated employing Glimepiride-CD-SLS inclusion complexes will be studied.

OP-96**FLUORESCENCE SPECTROSCOPIC TECHNIQUE COMBINED WITH MULTIVARIATE ANALYSIS FOR THE EARLY DETECTION AND DIAGNOSIS OF DMBA INDUCED HAMSTER ORAL CARCINOGENESIS****N. Krishnakumar**

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Fluorescence spectroscopy is a powerful non-invasive diagnostic tool to detect various cancers in real time based on the emissions of endogenous fluorophores. The aim of this study is to estimate the concentration of endogenous fluorophores using fluorescence spectroscopy in the discrimination of control and DMBA-induced different transformation lesions such as hyperplasia, dysplasia and well differentiated squamous cell carcinoma (WDSCC) tissues. Significant differences in the autofluorescence spectral signatures have been noticed at 410 nm excitation wavelength. In the emission spectrum, the endogenous porphyrin (PpIX) emissions was elevated at ~630 nm, ~665 nm and ~700 nm during different transformation lesions compared to control

tissues. However, the contribution of the 700-nm peak is substantial, particularly in WDSCC tissues, whereas in dysplastic lesions a broadening of only the 693- nm peak is seen, showing higher garnering of PpIX in WDSCC tissues. The results indicated the intensity of the porphyrin emission increased with the progress of the lesions and it can be exposed by endogenous fluorescence spectra analysis. Principal component-Linear discrimination analysis (PC-LDA) yields overall classification efficiency 81%. This exploratory work further demonstrates that fluorescence spectroscopy in conjunction with PC-LDA has potential for improving discrimination of control from neoplastic oral tissues.'

OP-97**NEUROPROTECTIVE EFFECT OF CHRYSIN ON HYPERAMMONEMIA MEDIATED NEUROINFLAMMATORY RESPONSES AND ALTERED EXPRESSION OF ASTROCYTIC PROTEINS.****M. Renuka and N. Vijayakumar**

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Neuroinflammation is an innate immune response in the central nervous system (CNS) against metabolic and pathogenic toxic wastes. This intention of this study to explore the modulating effect of chrysin on rudimentary pathophysiological mechanisms of ammonium chloride (NH₄Cl) mediated neuroinflammation in the experimental hyperammonemic rats. Hyperammonemic rats were provoked by intraperitoneal (i.p) injection of freshly prepared NH₄Cl (100 mg/kg b.w.) solution thrice a week for 8 consecutive weeks. Initially, the levels of brain ammonia and water content were assessed. Immunohistochemical, RT-PCR and western blotting analysis revealed that the expression of astrocytic markers includes glutamine synthetase (GS) activity and glial fibrillar acidic protein (GFAP) were down-regulated, whereas the expression of inflammatory

markers (TNF- α , IL-1 β , IL-6, p65 NF- κ B, iNOS and COX-2) were up-regulated in brain tissue of hyperammonemic rats. Oral supplementation of chrysin (100mg/kg b.w) to hyperammonemic rats considerably restored the levels of brain ammonia, water content, and the expressions of inflammatory and astrocytic markers. Our findings provided substantial evidence that the chrysin synergistically attenuating the neuroinflammatory mechanism by repressing the expression of proinflammatory cytokines and up-regulating the expressions of astrocytic markers via ammonia-reducing strategies. This data suggests that chrysin effectively acts as a therapeutic agent in opposition to hyperammonemia mediated neuroinflammation.

OP-98**OXIDATIVE STRESS IN DIABETES MELLITUS: IS THERE A ROLE FOR ANTIOXIDANTS?****Nubesh Khan**

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Diabetes mellitus is a group of metabolic disorder characterized by abnormally elevated levels of blood glucose due to complete or relative insufficiency of insulin secretion as well as disturbances in carbohydrate,

fat and protein metabolism. Increasing evidence revealed that oxidative stress plays a main role in the pathogenesis of diabetes mellitus. Free radicals are formed excessively in diabetes by glucose oxidation and non-enzymatic

protein glycation. Abnormally high levels of free radicals and the simultaneous decline of antioxidant defense mechanisms can lead to damage of cellular organelles and enzymes increased lipid peroxidation, and development of insulin resistance. These consequences of oxidative stress can promote the development of

complications of diabetes mellitus. Antioxidants help in neutralization of reactive oxygen species and significantly reduce the probability of progression of diabetic complications. The review describes the oxidative stress, antioxidants and their role in diabetes mellitus.

OP-99

ALTERING THE ELECTRICAL POTENTIAL OF A CANCER CELL MEMBRANE - A NOVEL STRATEGY TO TREAT CANCER

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Cancer is defined as an uncontrolled proliferation of cells and it is also known as neoplasm. A malignant tumor tends to invade the surrounding tissues and infiltrate/spreads from site of origin to additional distant sites elsewhere in the body via the lymphatic system or blood to other tissues, organs and destroying the normal tissues and vital organs. Cancer tissue competes with normal tissue for nutrients and eventually killing normal cells by nutritional deprivation. The drugs for the treatment of cancer associated with serious adverse reactions due to their non specific binding with normal cells, hence a new strategy should be developed to treat cancer effectively. The electrical potential and chemical properties of the cancer cells differ from normal cells i.e. the electrical potential of the cancerous cells are low and

it leads to an abnormal electron transfer, followed by electron stealing from the surrounding cells. These changes will affect the structure and function of the cell membrane as well as mitochondrial membranes by deactivating the electron transport chain and disturbing oxygen dependent energy production. In cancer cells, the voltage number values cross the threshold with a plus symbol in prefix and these values are ranges from -15 to -10, or even -5 can be experienced. The value goes below zero and beyond +30 will confirm the progression of cancer. The alteration of electrical potential and membrane permeability of a cancer cell membrane will alter both extracellular and intracellular environment of a cancer cell and it leads to cell death.

OP-100

MANAGEMENT OF KALLADAIPPU (UROLITHIASIS) IN SIDDHA SYSTEM OF MEDICINE - PREVENTIVE AND THERAPEUTIC PERSPECTIVES

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Urolithiasis is one among the non-communicable diseases having a greater impact in affecting one's quality of life, worldwide. In India, 5-10% of the population is affected with urinary stones, out of which 50% may end up with renal damage or even loss of kidneys due to improper medication and large socio-economic burden towards surgical procedures. In Siddha system of medicine, the disease *Kalladaippu* may be correlated with the clinical manifestations of Urolithiasis. The etiological factors of *Kalladaippu*, depicted in Siddha literatures include seasonal influence (*Mudhuveniland Kaarkalam*), Habiat (*Neithal* and *Mullai*), altered food habits and controlling the natural urges or reflexes. The management of *Kalladaippu* includes not only the therapeutics but also with the preventive regimen such as *naalozhukkam* and *kaalaozhukkam* for a normal healthy life, which is the focus of the hour. Though adapting a healthy life style and food habits can reduce the risk of an illness,

appropriate treatment approach is very much required to avoid progress and complication of the condition. Siddha system renders various medicinal preparations with herbs, minerals and metals for *Kalladaippu* which include lithotriptics, diuretics and antilithiatics having anti-nocioceptive, antimicrobial, anti-inflammatory, nephroprotective and antioxidant properties. Also, to overcome the adverse effects of contemporary medicine, Siddha system offers an effective management for *Kalladaippu* for the betterment of mankind and will be discussed in detail.

OP-101

ANALYSIS THE ANTIOXIDANT ACTIVITY OF THE ISOLATED BICYCLO [2.2.1] HEPT-5-ENE-2-CARBONITRILE COMPOUND FROM THE MEDICINAL PLANT – VITEX NEGUNDO (LINN.)

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Vitex negundo Linn. (VN), belonging to family Verbenaceae, is an aromatic shrub distributed throughout India. In the ayurvedic system of medicine it is used as a drug of choice to manage pain, inflammation and other related diseases. It contains many polyphenolic compounds, terpenoids, glycosidic iridoids and alkaloids. *V. negundo* was investigated by employing various established *in vitro* systems antioxidant, the bicyclo [2.2.1] hept-5-ene-2-carbonitrile such as DPPH 2,2-Diphenyl-1-Picrylhydrazyl, Superoxide radical scavenging, Hydroxyl radical scavenging activity, Nitric oxide radical scavenging, Hydrogen peroxide scavenging activity and Iron reducing power assay. The antioxidant

activity shows the highest inhibition of DPPH activity (95% in 120µg/mL), superoxide scavenging activity in (69.76% in 500 µg/mL), Hydroxyl radical scavenging activity in the bicyclo [2.2.1] hept-5-ene-2-carbonitrile of high activity in (67.09% in 500µg/mL), Nitric oxide radical scavenging more effective in (52.06% in 500 µg/mL), Hydrogen peroxide scavenging activity high activity in (75% in 120µg/mL) and Iron reducing power assay inhibited (75% in 120µg/mL) and it was concluded that the bicyclo [2.2.1] hept-5-ene-2-carbonitrile from the leaves of *Vitex negundo* possess the significant antioxidant activity.

OP-102

STUDY OF THE LEVELS OF CARDIAC ENZYMES (CK MB/TROPONIN T) AND ITS ASSOCIATION WITH MYOCARDIAL DAMAGE IN ACUTE STROKE

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To study the serum cardiac enzymes level in 50 patients who were admitted at RMMCH with the history of acute stroke within 72 hrs after the onset of symptoms in correlation with ECG and ECHO Findings. All patients with acute stroke who got admitted in the Department of Medicine, RMMCH, Annamalai University for the years 2015-2017 were included in the study. These selected cases after applying inclusion criteria were subjected to a detailed history & clinical examination. CK-MB & Troponin T levels were assessed from their venous samples. ECG, ECHO & CT-brain imaging was done for all patients. This study shows that both ischemic and hemorrhagic stroke may be accompanied by acute

myocardial ischemia or infarction with raised serum cardiac enzyme levels & associated arrhythmias. These findings were co related with echo and showed the possibility that acute cardiac abnormality in stroke patients may be a direct consequence of neurological lesion. It also reflects that unlike CK-MB, Troponin T does not increase after ischemic stroke. Hence, elevated CK-MB levels do not always translate into *in-vivo* evidence of myocytolysis occurring after stroke. This CK-MB elevation in stroke patient does not necessarily reflect an acute coronary event. Troponin T promises to be a valuable marker in this regard.

OP-103

IN VITRO ANTIOXIDANT ACTIVITY OF DATURA STRAMONIUM, L. LEAVES AND DATURA METAL, L. SOLANACEAE – A COMPARATIVE STUDIES

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The ethanolic extracts of *Datura stramonium* and *Datura metal* (Family: Solanaceae) collected from Pappakovil, Nagapattinam Dist of Tamil Nadu, India. The Ethanolic extract obtained by maceration extraction was examined for its antioxidant activities. The antioxidant activity was determined by means of the DPPH radical scavenging

test, Total antioxidant (TAA) and superoxide anion scavenging activity assay (SASA). Result from three methods indicate that the antioxidant activity of *D. stramonium* and *D. metal* of ethanol extracts were time and concentration dependent. The antioxidant potential of *D. stramonium* and *D. metal* determined by the DPPH

method expressed as IC₅₀ was The half inhibition concentration (IC₅₀) of plant extracts *D. stramonium*, *D. metel* and ascorbic acid were 49.72 µg ml⁻¹, 50.35µg ml⁻¹ and 34.91 µg ml⁻¹ respectively. the antioxidant potential of *D. stramonium* and *D. metel* determined by the Total antioxidant assay (TAA) method expressed as IC₅₀ was The half inhibition concentration (IC₅₀) of *D. stramonium*, *D. metel* and ascorbic acid were 49.59µg

ml⁻¹, 49.94µg ml⁻¹ and 42.41 µg ml⁻¹ respectively. the antioxidant potential of *D. stramonium* and *D. metel* from determined by the Superoxide anion scavenging activity assay (SASA) method expressed as IC₅₀ was The half inhibition concentration (IC₅₀) of *D. stramonium* and *D. metel* were, 49.58 and 49.73µg ml⁻¹ and ascorbic acid were 31.62µg ml⁻¹ respectively.

OP-104

INVESTIGATION OF *IN VITRO* FREE RADICAL SCAVENGING ACTIVITY OF VALPROIC ACID IN HYPERTENSIVE RATS

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The present study was aimed to investigate the *in vitro* free radical scavenging activity of valproic acid against N^o-nitro-L-arginine methyl ester hydrochloride (L-NAME) induced hypertension. *In vitro* free radical scavenging activities of valproic acid were evaluated against superoxide anion, hydroxyl radical, ABTS⁺ and DPPH[•]. Hypertension was stimulated in adult male albino Wistar rats, considering 180–230 g, by oral administration of the L-NAME (40 mg/kg/body weight/day) in drinking water for 4 weeks. Rats were cured with valproic acid (25, 50 and 100 mg/kg) for four weeks to determine the dose-dependent effect. A significant reduction in the levels of nitrite/nitrate (NO_x)

in aorta was perceived in L- NAME induced hypertensive rats. Moreover, *in vitro* free radical scavenging activity of superoxide anion, hydroxyl radical, ABTS⁺ and DPPH[•] radical scavenging possible of valproic acid was also quantified. Treatment with valproic acid (25, 50 and 100 mg/kg bw) carries back the above parameters to near normal level, in which 100 mg/kg displayed the highest effect than that of other two doses. Further, valproic acid displays concentration dependent antioxidant potential. These results suggest that valproic acid acts as a free radical scavenging agent against L-NAME induced hypertension.

OP-105

STUDY OF *IN VITRO* FREE RADICAL SCAVENGING ACTIVITY OF D-CARVONE IN L-NAME RATS

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The present study was aimed to investigate the *in vitro* free radical scavenging activity of D-carvone against N^o-nitro-L-arginine methyl ester hydrochloride (L-NAME) induced hypertension. *In vitro* free radical scavenging activities of D-carvone were evaluated against superoxide anion, hydroxyl radical, ABTS⁺ and DPPH[•]. Hypertension was induced in adult male albino Wistar rats, considering 180-230 g, by oral administration of the L-NAME (40 mg/kg/ body weight/day) in drinking water for four weeks. Rats were cured with D-carvone (5, 10 and 20 mg/kg) for four weeks to determine the dose-dependent effect. A significant reduction in the levels of nitrite/nitrate (NO_x) in aorta was perceived in hypertensive rats. Moreover, *in vitro* free radical scavenging activity of superoxide anion, hydroxyl radical, ABTS⁺ and DPPH[•] radical scavenging possible of D-carvone was also quantified. Treatment with D-carvone (5, 10 and 20 mg/kg bw) carries back the above parameters to near normal level, in which 20 mg/kg displayed the highest effect than that

of other two doses. Further, D-carvone displays concentration dependent antioxidant potential. These results suggest that D-carvone acts as a free radical scavenging agent against L-NAME induced hypertension.

OP-106

RECUPERATIVE ROLE OF COMBAINED EFFECTS OF SEAWEEDS, *SARGASSUM WEIHGTII* AND *KAPPAPHYCUS ALVARAZII* ON STREPTOZOTOCIN INDUCED DIABETIC IN RATS**M. Rajakani, M. Muthulingam, P. Padmavathy and R. Karuppasamy**

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Seaweeds have been used since ancient times as a source of medicinal drugs. Today seaweeds are the raw material for industrial production of agar, carageenan and alginates. They are nutritionally valuable as fresh or dried vegetables, or as ingredients in a wide variety of prepared foods. In particular, certain edible seaweeds contain significant quantities of lipids, protein, vitamins and minerals. Over the past several decades, seaweeds have been possess biological activity of potential medicinal value. The present study was undertaken to investigate the effect of aqueous combined extracts of *Sargassum weihgtii* and *Kappaphycus alvarazi* on streptozotocin induced diabetics in male albino Wistar rats. Streptozotocin induced diabetic rats were treated with aqueous combined extracts of *Sargassum weihgtii* and *Kappaphycus alvarazi* at the doses of 300 + 300

mg/kg, p.o. and its influence on glucose level, insulin, hemoglobin, glycosylated hemoglobin, were observed. Histological observation of pancreas also studied. Oral administration of aqueous extract of combined extracts of *Sargassum weihgtii* and *Kappaphycus alvarazi* at the doses of 300 +300 mg/kg, p.o. to streptozotocin treated rats showed significantly decrease in plasma glucose, glycosylated hemoglobin, where as plasma insulin, hemoglobin levels were significantly increased. Histopathological observation of pancreas reverses the trends towards normalcy. Hence, it can be concluded that combined extracts of *Sargassum weihgtii* and *Kappaphycus alvarazi* prove to be effective in the treatment of diabetes mellitus owing to its ability to increase insulin secretion.

OP-107

EFFECT OF AEROBIC EXERCISE ON ENDURANCE CAPACITY IN DIABETES MELLITUS PATIENTS**E. Chandramouli, B. Srinivasan**

Department of Physical Medicine and Rehabilitation, Rajah Muthiah Medical College and Hospital, Annamalai University.

Regular exercise is a key element in the management of type 2 diabetes. It can help people with diabetes to achieve variety of goals including enhancement of cardiopulmonary fitness, improvement of glycemic control, reduction of blood pressure etc. Walking is often the most popular and most preferred feasible type of aerobic exercise in overweight middle aged and elderly people with diabetes. To investigate the effect of aerobic exercise on endurance capacity in type 2 diabetes mellitus patients. 20 participants aged 40-55 years diagnosed with type 2 diabetes mellitus attending OPD of Rajah Muthiah Medical college were recruited. Patients with renal, cardiac complications were excluded.

Aerobic exercise program includes moderate brisk walking 30 minutes a day for 5 days per week approximately 40-60% of VO₂ max and 50-70% of MHR according to American College of Sports Medicine and American Heart Association guidelines. Endurance capacity was measured by Harvard Step test before and after aerobic training. Dependent t test for the experimental group showed significant increase of pre- and post-Fitness Index Score (p value < 0.05) but the pre- and post-test after 1 min, 2 min and 3 min Heart rate (HR) was not significantly altered. The study showed significant improvement in endurance capacity after aerobic training.

OP-108

PREVALENCE OF RISK FACTORS FOR CARDIOVASCULAR DISEASE AMONG SCHOOL AGE CHILDREN AND ADOLESCENTS OF ASIAN INDIAN ORIGIN**Partha Sarathi Datta**

Ph.D Research Scholar, Biomedical Research Laboratory, Department of Anthropology, Visva-Bharati, West Bengal, India.

The purpose of this cross-sectional study was to find out the prevalence of cardiovascular disease (CVD) risk factors in school going children and adolescents. 1027 children and adolescents, aged 10 to 18 years, were

participated in this study. Nine anthropometric measurements were recorded using proper methodology. Total lipid profile and blood glucose were also measured. Data were collected on socioeconomic status, physical

activity and weekly food consumption from each participant. The urban participants have higher mean values of body mass index (BMI) and waist-hip ratio (WHR). No significant sex difference is observed for blood pressures. Mean values of blood glucose and lipid profile are slightly higher in the urban participants.

Sedentary lifestyle and faulty food habits was found to be significant association with blood glucose level. The study showed that the prevalence of CVD risk factors was high in both urban, sub urban and rural participants. Therefore, we need an effective preventive strategy to reduce the incidence of CVD in their later life.

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