

## SFRR-India Satellite Meeting Report 2013

The ‘*Satellite Meeting of the Society for Free Radical Research (SFRR)–India 2013*’ on the theme “**Free Radical Damage And Herbal Antioxidants In Health And Disease**” was held at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu, during 4<sup>th</sup> and 5<sup>th</sup> February, 2013. The conference was organized by the Department of Biochemistry, Biotechnology and Bioinformatics of Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore under the secretarial guidance of Prof. P R Padma. The meeting was successful with more than 300 delegates from several parts of the country and abroad from academic institutions and research laboratories.

The program started with a formal inauguration, which was presided over by Dr. Sheela Ramachandran, Vice-Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore. In her elaborate presidential address, she highlighted the potential of the compounds in the phytokingdom in counteracting free radical-induced damage and diseases. The symposium began with a brief introduction about the ‘Annual Satellite Conference of the SFRR’ by the organizing secretary of the symposium, Dr. P R Padma, Professor, Department of Biochemistry, Biotechnology and Bioinformatics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

Dr. Lindsay Brown, Professor of Biological and Physical Sciences, University of Southern Queensland, Australia gave a keynote address on the “*Foods as Medicine for Obesity*”. He highlighted that rutin decreases abdominal fat deposition. He elaborated on the aspect that foods are our medicine, where rutin can also improve cardiovascular structure and function, attenuate hepatic steatosis, inflammation, fibrosis and improve liver function. He also discussed the highly effective role played by coffee and purple carrot in improving endothelial function due to the phytochemicals. This marked the end of the inaugural session of the symposium.

There were five plenary sessions and the first session began with a plenary lecture by Dr. Holger Steinbrenner, Professor and group leader, Institute for Biochemistry and Molecular Biology, Heinrich Heine University, Dusseldorf, Germany. He elaborated on the “*Interplay of Selenium and Energy Metabolism in Type II Diabetes Mellitus*”, where he showed that the micronutrient selenium has a long track record for anti-diabetic and insulin-mimetic properties, but on the contrary, more recent epidemiological data have suggested potential pro-diabetic effects of supranutritional selenium intake in humans. He emphasized that, taken together, a more careful handling of dietary selenium supplements is a must.

Plenary session II on “*Physicochemical Studies on the Evaluation of the Antioxidant Activity of Herbal Extracts and their Active Principles*” was discussed by Dr. S Adhikari, Radiation and Photochemistry Division, Chemistry Group, Bhabha Atomic Research Centre, Mumbai. He shared his findings on the role of antioxidants and how the oxidation of biological molecules can induce a variety of pathological events like atherogenesis, carcinogenesis and ageing. He also explained how the presence of antioxidants even in trace amounts can help in the prevention of oxidation in the biological system.

The second speaker of the plenary session two was Dr. Pieter Koolwijk, Professor, Department of Physiology, Institute for Cardiovascular Research, VUmc University Medical Center, Amsterdam, The Netherlands, who gave an elaborate report on “*Hypoxia-induced Outgrowth Arrest of Circulating Endothelial Colony Forming Cells*”. His findings indicated that oxygen may play a major role in the contribution of endothelial colony forming cells in neovascularization. Human endothelial colony forming cell colonies were grown from cord-blood mononuclear cells and characterized for his study by his research group.

Plenary session III was shared by two eminent scientists. One of them was Dr. G B Maru, Professor and Principal Investigator, Advanced Center for

Treatment, Research and Education in Cancer, Tata Memorial Center, Navi Mumbai, who delivered a lecture on “*Cancer Prevention by Herbal Antioxidants: Current Status and Future Perspective*”. He brought out the fact that a number of plant-derived antioxidants have shown cancer preventive activities against diverse carcinogens in experimental systems. He added that epidemiological evidences suggest a good correlation between decrease in the incidence and mortality from cancer and high consumption of green leafy vegetables and fruits.

The next interesting lecture of the same plenary session was on “*VEGF Signaling in Stunted Angiogenesis during Human Myocardial Hypertrophy*” by Dr. Hari S Sharma, Biomedical Scientist and Professor, Institute for Cardiovascular Research, VUmc University Medical Center, Amsterdam, The Netherlands. He showed evidence that the right ventricular hypertrophy and failure are prominent features in patients with cyanotic congenital heart diseases, tetralogy of fallot requiring cardiac surgery at a very young age. He also pointed out that currently, differential gene expression profile and molecular phenotyping are being done using high density DNA microarray chip analysis. This marked the end of the first day of the 2-day symposium.

Day two of the conference started with a scintillating session of videoconferencing (session four) by Dr. S Sreelatha, Research Scientist, MIT Alliance for Research and Technology (SMART-NUS), National University of Singapore, Singapore. She delivered a lecture on “*Mechanobiology of Cancer*” by video conferencing live from Singapore. Dr. Sreelatha brought to light that molecules that mediate mechanotransduction may represent future targets for therapeutic intervention in a variety of diseases. She also mentioned that studying human diseases from a biomechanics perspective can lead to a better understanding of the pathophysiology and pathogenesis of a variety of human diseases and may offer new targets for the treatment of malignant disease. Many participants expressed that it was for the first time that they had witnessed an overseas live videoconferencing session in a symposium.

The second day’s plenary session (Session V) was based on “*Disease progression mediated by Egr-1 associated signaling in response to oxidative stress*”

by Dr. Elisabeth Deindl, Head of the Group of Arteriogenesis, Walter Brendel Center of Experimental Medicine, Ludwig-Maximilians University, Munich, Germany. Dr. Deindl explained that when cellular reducing enzymes fail to shield the cell from increased amounts of reactive oxygen species, it leads to the progression of atherosclerosis, tumors or pulmonary hypertension; Dr. Deindl showed how the transcription factor early growth response 1 (Egr-1) plays a role in the pathophysiology of these diseases in response to oxidative stress. It was followed by a second lecture on “*In silico Approaches to Studying the Effect of Herbal Antioxidants*” delivered by Dr. P R Padma, Professor, Department of Biochemistry, Biotechnology and Bioinformatics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore. She explained about the novel *in silico* approach, where the target molecules affected by oxidative damage are chosen from different pathways and disease processes and the interaction of these target molecules with various antioxidant compounds are studied. Dr. Padma emphasized that the *in silico* studies can strongly substantiate the conventional wet lab studies.

The session continued with another talk by Mr. Badri Narayan, Senior Application Scientist, BD BioScience, Bengaluru, who highlighted on “*Understanding Free Radical Biology with New Tools: New Outcomes and Observations*”. He brought to light the use of novel techniques involving both biophysical and biochemical methods for their analysis and interpretation of cell injury and oxidation of biomolecules. Flow cytometry is one such novel, but still unexplored method of understanding free radical biology and the final effect on the cell, he stressed.

The last lecture of this session was by Mr. R Raghu, Executive Director, Schrodinger, Bengaluru who delivered a talk on “*Success Stories of Computer Aided Drug Design: IRAK4 and ACC*”. He brought to light that with the advent of computational methods, drug discovery has been accelerated and is becoming cost-effective when compared to traditional drug discovery, which is time consuming and involves billions of dollars. He emphasized in his speech that several successful applications of computational techniques in lead identification, optimization etc. can be used for drug discovery.

Each of the plenary lectures was followed by scintillating discussion sessions. Apart from the informative lectures by the scientists, four different poster sessions were also conducted during the

conference, where enthusiastic participants shared their research findings with the fellow participants as well as with the resource persons. The posters were evaluated by the expert teams and two best poster awards were given in each of the four poster sessions. Each award carried Rs.1000/= in cash and a certificate.

The conference came to a close with voices from the young researchers during the panel discussion, wherein thought-provoking discussions on various aspects, including directions to improve ourselves as researchers and community education were discussed. The panelists also recorded that one of the outcomes of the conference would be to recommend to the government to take preventive measures to combat

diseases before they occur, at a lower cost than it would take to treating them afterward. This was especially stressed for the HBV vaccination for adolescent girls to prevent cervical cancer.

Out of more than 300 participants who attended the conference, some of them shared their fruitful experiences as feedback about the 2-day scientific sessions at the university. Before the curtains were drawn, a formal vote of thanks was delivered by Dr. D Kavitha to conclude the successful 2-day international symposium.

The organizing team acknowledges the support provided by the funding agencies: SFRR-India, UGC and DST and industries and individuals through sponsorship.

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