

Bio-exploration for human welfare: An integrative approach

ABSTRACT

North East India is known for its immense biodiversity and the two day conference held in November 2019 witnessed the rich heritage of the region. Many brainstorming scientific sessions among the leading academicians and industry personals with the research scholars, UG and PG students of different parts of the region were special. The oral and poster sessions explored key areas of research such as Biochemistry and Molecular Biology of Plants and Microbes, Agriculture Science, Environmental Science and Biodiversity, Food and Nutrition Sciences, Biomedical Science and Bioinformatics.

Key words: North East India, Oral and poster session, Molecular Biology of Plants and Microbes, Agriculture Science

A two day long national conference was organized by the Faculty of Science of Assam down town University in collaboration with, **Institute of Advanced Studies in Science and Technology** (IASST) & Society of Biological chemists (India), North east chapter Jorhat, on 8th & 9th of November'2019 at its University premise. The theme for the conference was "Bio exploration for Human Welfare- An integrative approach" (BEHW). The conference had five sub themes, namely: Biochemistry and Molecular Biology of Plants and Microbes, Agriculture Science, Environmental Science and Biodiversity, Food and Nutrition Sciences, Biomedical Science and Bioinformatics and lastly an Industry-academia Session. The two-day event was followed by intense brain storming parallel sessions for day one. The second day was an interactive session between the industry personals, academicians and students. To brief the current scientific scenario of the theme, the first day of the conference was purely based on the talks by the scientific experts on their specialized area under the respective sub themes. The second day of the conference was addressed by renowned and veteran personalities from industrial background. This multi thematic conference highlighted the need of scientific research to meet the global need as well as emphasized on the skill requirement by the students to excel in various industries. The inaugural session began with the welcome address

from Dr B. G. Unni, Chairman, BEHW & introductory talk from Dr. N. C Talukdar, Director, IASST, Guwahati. The session was followed by the speeches from Hon'ble Vice-Chancellor Prof Amarjyoti Choudhury The session highlight was the talk from the key note speaker Prof. D. Karunakaran, HoD, Department of Biotechnology, IIT Madras, Chennai, who emphasized on the role of micro RNA's and enlighten the gathering regarding the recent development in cancer Biology. The abstract book containing 40 odd abstracts was released and applauded by the gathering.

The session on Agriculture science, Environmental Science and Biodiversity witnessed scientific talks from Dr. Samarendra Hazarika, Principal Scientist (soil), HOD, NRM, ICAR Research Complex for NEH Region, Umiam, Meghalaya, who emphasized on the climate change and hill agriculture of North East India and highlighted the required initiative, such as NEI declared as a drought reason that faced severe consequence of flood at different labels over the last 10 years or so. He also stressed that this has drastically effected the tea production in Assam. He emphasized the point that the North East Region is witnessing and annual increasing temperature at the rate of 0.1 degree centigrade per annum. The shift in the climate scenario and lack of mitigation strategies with the farmers makes the challenge in agriculture further complex. The talk

emphasized crop based approaches like development of heat tolerant, drought tolerant, submergence tolerant varieties which respond positively in terms of growth and yield under changing climate condition to overcome this challenge apart from adopting intensive integrated farming strategy. Transfer of such technology helps to maintain soil health, promotes conservation and recycling rain water, generates employment opportunities and there by promotes food and nutritional security under changing climatic condition. The presentation emphasizes on technological innovations in climate resilient agriculture (NICRA) and also brief the gathering on various research facility develop in his centre. Dr. N.C Talukdar gave a talk on "Bio-exploration of Northeast India". He spoke on the scope of Northeast in ethnic food marketing in global scenario, value addition to indigenous crops which has some exclusively unexplored or demerits in direct use such as Naga King Chili. He emphasized the importance of edible insects which could be turned into global industry. He also spoke for Muga silkworm which has many unused proteins to be explored and biochemistry of different colored muga silkworms. In addition, he mentioned about the upcoming "Centre for Ethnic Heritage alcohol and Foods in North East India". The talk on "Crop Bio fortification: Current status and prospects for utilization to meet challenges of food and nutritional security" was delivered by Prof. Nikhil K Chrungoo, Department of Botany, NEHU Shillong, Meghalaya. He started the talk with concept of multi institutional consortia for research in North-east India. He gave an idea on fortification of crops which are deficient in some essential amino acids. This modification of crops would be taken from uneconomical plants and make the economical crop self-efficient in nutrients. A brilliant example is the rice fortification with common buck wheat plant. Later, Prof. A. B. Kunnumakkara, IIT, Guwahati, gave a talk on "Role of Phytochemicals in the Prevention and treatment of Chronic Diseases". He presented a global status on the use of curcumin: an active phytochemical of turmeric plant. It is the most researched plant for phytochemical with daily publications rate of 14000 papers. This plant is also used as commercial product in Japan as turmeric bath as it has anticancer property and for healing and cosmetic use. The talk on "Exploration and functional characterization of culturable micro flora associated with Tea for plant growth promotion and

disease suppression" was delivered by Dr. Debajit Thakur, Associate Professor of IASST. He discussed on increasing tea plant defense system against various pathogens which effects its production. He showcased the findings from his experimental work on inoculation of streptomycin for enhancing tea plant defense mechanism.

In the parallel session, Dr. Sabitry C. Bordoloi, Professor & Scientist G (Retd.), IASST Guwahati, delivered a talk on "West and Its Management". The talk highlighted various types of wastes namely industrial, solid, aquatics. She put forwarded her view on Phytoremediation and Bioremediation for management of hazardous hydrocarbon contaminated soil near oil installations in Assam. She also emphasizes on the use of weeds such as *Cyperus Rotendus*, *Ageratum Species*, *Cynodon dactylon* and *Paspalum sp.* for degrading hydrocarbons and expressed her hope on *Paspalum sp.* as the most potent candidate.

The last talk of the session was delivered by Dr. Mridul Buragohain, Assistant Professor, Department of Chemistry, Lakhimpur Girls' College, North Lakhimpur, that enlighten the gathering about the findings of foldscope as a tool for identification of bacteria's apart from imparting scientific orientations among the students. He also stated the success of this government initiative.

A poster session was held that witnessed 40 odd poster presentations from participants across the North Eastern Region. A poster entitled "Seroprevalence of legionella pneumophila, chlamydia pneumoniae and mycoplasma pneumoniae in patients with lower respiratory tract infection attending a tertiary care hospital" was awarded the best poster award and suitably rewarded during the prize distribution ceremony.

The evening shift witnessed a packed scientific parallel session, where one of theme was Food and Nutrition Science and the first talk was delivered by Prof. S. Dave Advisor, Food Safety and Standards Authority of India (FSSAI), New Delhi. He spoke on the current scenario on the guidelines and amendments that happened to FSSAI over a period of time. He commented that several standards and regulations were also framed in line with international standards and notified over the past five years and more are necessary to complement the development of the food processing industries. Dr. Charu Lata Mahanta, Professor and Dean, Department of Engineering & Technology, Tezpur University, delivered

a talk on “Encapsulation and Delivery of Bioactive Compounds in Functional Food” and enumerated the incidents of disease like diabetics, cardiovascular disease, obesity, cancer and problems associated with nerve. She focused on the protocol to retain / enhance the bioactivity of these compounds. She stated that microencapsulation and nano- encapsulation techniques have emerged as important ways of decreasing their sensitivity to changes in environmental conditions and also for targeted delivery of the bioactive compounds. Dr. Ruma Bhattacharyya, Professor, Food Science and Nutrition, Assam Agricultural University, spoke on triple burden of Malnutrition. She highlighted the rising trends in over nutrition and associated non communicable diseases. The triple burden of presentation under nutrition, micronutrient deficiency and rising over nutrition are the resultant outcome of the ongoing economic, social, lifestyle, demographic, nutrition and health transitions. There should be an concerted effort by the country as a whole to ensure that intervention programmes, across sectors are effectively implemented with the participation of the people in general and valuable in groups in particular so that the goal of reducing the triple burden of malnutrition.

The other parallel session was on Bio Medical Science and Bio Informatics. Dr. S. Medhi from GUIST delivered a talk on the role of various proteins – protein interaction analysis besides unveiling the cultural mechanism behind at the molecular level. The indebt knowledge and the beauty of bioinformatics left the audience spell bound. It was followed by the talk from Dr. P Manna from IASST, who highlighted the therapeutic potential of vitamin K against impaired lipid home statics associated with hyperlipidemia pathophysiology. The results of his study highlighted a novel protein cGas6 and VK were significantly lower in hyperlipidemia subjects. His talk concluded with the comment that VK supplementation prevented the impaired lipidhomeostasis via activating cGas6. The final talk of the session was delivered by Dr. R. Sarmah, Dean Faculty of Science, AdtU on target proteins of helicobacter pylori and probable plant derived natural compounds from plants of North- East India against bacterium. He spoke on molecular docking and emphasize on the folklore use of the plants Centella Asiatican and houttuyniacordata and analyzed their bioactive compounds.

The day two of the event was started by the introductory talk by Mr. Prasad Kumar P, General Manager, Sun Pharmaceutical Industries limited, Guwahati. The keynote lecture by Dr. Bidyut Kr. Sarmah, Director, DBT-AAU Centre, Assam Agriculture University who spoke on the possibilities, initiative by Government and need for entrepreneurship and briefs the gathering on various government initiative in this direction. The industry academic session had four talks on bridging the gap between industries and academic as well as research institute. Prof. Probohd Borah, Head Dept. of Microbiology, College of veterinary Science, AAU, Khanapara spoke on the Insilco designing of drugs, and hinted on how this technique are reducing the time frame for developing a new drug. Computer-aided drug research and development area of research s finding skilled, experienced people to manage all the bioinformatics tools available to us.

Dr. Ashish Kar from TERI, Guwahati, emphasized on the rich ethno botanical knowledge of indigenous tribes has received resonance by scientist, policy maker, Pharmaceutical Company and academics. He highlighted the current work of his institute. Mr. S. Kandukuri from BIOCON brief about the process of crystallization and showed the initial stages of downstream processing and successively contribute in purification of peptide. He said that the laboratory scale development of a preparative crystallization projects roles on setting pattern, crystal morphology and yield trends asses the outcome of executed experiment. The last talk of the session was delivered by Mr. Monjoy Choudhury, Founder Ayursurgence who emphasized on the need for industrialization of medical treatment by using basic science striking the balance and hence reducing the dependency of patients to the drug which are toxic in nature. He put forward his views about the use of natural drugs in understanding a complex metabolic disease such as diabetics.

A parallel session on young scientist presentation was held and it was followed by the valedictory function, certificate and prize distribution and vote of thanks.

Dr. Manash Pratim Sarma, Dr. Nayan Talukdar
and Mr. Bhriganka Bharadwaj
*Faculty of Science, Assam down town University
Panikhaiti, Guwahati, Assam, India*