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NEWS

Canadian Academy Fellowship for C. N. R. Rao

C. N. R. Rao, Linus Pauling Research Professor at the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, has been elected Foreign Fellow of the Royal Society of Canada. The Royal Society of Canada is the prestigious academy of science which represents the scientific elite of Canada. It occasionally elects scientists of eminence from other countries as foreign fellows based on their contributions to science. This is the first instance an Indian scientist has been elected as a foreign fellow. C. N. R. Rao is already a member of all the major academies of the world.

MEETING REPORTS

Nutrition is the key to health and nation’s development*

So say eminent nutrition scientists at the IX Asian Congress of Nutrition. The Nutrition Foundation of India (NFI) and the Nutrition Society of India (NSI) jointly sponsored the Congress. The octogenarian doyen of Nutrition Science, C. Gopalan, president of the congress and the brain and brawn behind it. The theme of the congress was “Nutrition goals for Asia – Vision 2020”.

According to a recent WHO report, under-nutrition ranks first and together with micronutrient deficiencies (iron, zinc and vitamin A deficiencies) it contributes to over 24% of the burden of disease in terms of Disability Associated Life Years (DALY) lost in the high mortality developing countries of Africa and South Asia. South Asia has over 50% of the malnourished women and children in the world. The holding of the conference in India at this juncture is therefore very appropriate. India hosted the first Asian Congress of Nutrition at Hyderabad in 1971. Almost 1400 delegates from 49 countries including 1025 delegates from 25 Asian countries participated in the conference. The sessions were well attended throughout.

The scientific fare included 4 plenary symposia, a ‘Meet the Professors’ session on ‘Nutrition vision for the future’, a science–industry interactive session, 3 plenary lectures, 3 special lectures, 30 symposia and over 700 free communication papers. The vast multi-disciplinary subject of nutrition, covering diet, health, agriculture, food science and technology, biochemistry, analytical methods, genetics, toxicology, risk science, nutrition education, behavioural science, policy matters and management, were covered.

A distinct shift in research emphasis from deficiency diseases, and their aetiologypathology, to diet (particularly functional foods) and degenerative diseases, genomics and management at scale was apparent. While disappearance of florid forms of deficiency diseases is a matter of great satisfaction, several aspects of the link between biochemistry, metabolism and pathology of those diseases remain unexplained and will never be explored.

K. C. Pant, Planning Commission, Government of India, inaugurated the conference. Stressing the importance of optimal nutrition for health and human development, he pointed out that developing nations face the double burden of malnutrition and infection on one hand, and increasing incidence of degenerative diseases such as diabetes, blood pressure, coronary heart disease, and cancer, due to changing lifestyles and food preferences on the other. Diet can play an important role in preventing these diseases as well.

The first plenary session on Changing Nutrition Scene in Asia, stressed this trend further. While East, and S. E. Asia and Middle East countries are fast moving towards elimination of undernutrition, the problem still lingers in South Asia, of which India is the largest country. Over 50% of children in India continue to suffer from various grades of malnutrition and hidden hunger (vitamin and mineral deficiencies). According to Ge Keyoum from China, over 60% children in the Democratic Republic of Korea (N. Korea) are stunted and underweight, due to acute shortage of food. Gopalan urged for a paradigm shift in objectives from food security to nutrition security; child survival to child health; and just literacy to education and imparting of skills. Functional significance of stunting at different developmental stages needs to be examined. Prevention of obesity and consequential diseases are emerging challenges, not only for the more affluent east Asian and Middle East countries, but also for South Asian countries.

New technologies in agriculture such as nutrition genomics, bio-fortification (identification and propagation of naturally endowed varieties), offer unique opportunities for augmenting food and nutrition security through dietary diversification. However, safety and ecological sustainability have to be ensured, said leading agriculture scientists S. K. Datta, G. S. Khush, H. Bouis, and M. J. Williams.

Delivering NSI’s Srikanth Memorial oration, on ‘Ensuring ecological, social and economic access to balanced diets and safe drinking water’, M. S. Swaminathan outlined the strategy for an integrated approach to elimination of hunger. Since females are the worst victims of chronic or transient hunger, he stressed the need for a life-cycle approach to nutrition with appropriate interventions and nutritional safety nets. Strategies for improving women’s reproductive health were the focus of a symposium on nutrition and reproductive health. India is attempting an interdepartmental convergence approach to nutrition and reproductive child health programmes, said Prema Ramachandran, Advisor, Planning Commission.

The NSI award lecture, the Gopalan oration, was delivered by C. Chunming from the Chinese Centre for Disease Control and Prevention, Beijing. The theme of the lecture was ‘Nutrition and economic development’. While on the one hand nutrition status is the outcome of economic development, nutrition plays an important role in accelerating economic development. The latter is not being sufficiently recognized, he said. Kraisid Tontiserin, FAO, discussed the success stories from Asia towards attaining food and nutrition security, and suggested that these can guide for future food security and nutrition planning. The special lecture ‘Nutrition as human right – context, concepts and challenges’, delivered by Cecilia A. Florentino, University of Philippines, raised the complex issue of malnutrition existing despite global food adequacy, affordable nutrition programmes, explicit nutrition policies and scientific breakthroughs. She recommended ‘activism with academic base’. The related topic ‘Changing views on women nutrition’ was handled by Sook He Kim from Korea. She pleaded for elimination of traditional cultural and social bias against women in Asia, to facilitate growth of the society.

Recent advances in genetics and genomics have shed new light on the interaction of genes and nutrients. The plenary symposium ‘Nutrigenetics and nutrigenomics’ dealt with this fascinating subject. According to A. P. Simopoulos, susceptibility to degenerative diseases is to a large extent genetically determined. Genetic variation influences the response to diet. Therefore dietary interventions must be based on an understanding of the frequency of genes in the population whose effects we are trying to control and modify. Geneticists and nutritionists have to work together.

Among the nutrients, the importance of Omega-3 fatty acids (n-3 PUFA) is increasingly being realized. The paper of R. De Caterina showed how n-3 PUFA regulate the transcriptional activation of genes, e.g. adhesion molecules, chemotactants, inflammatory genes and some secondary cytokines. There was a full symposium on Omega-3 fatty acids in growth, development and chronic diseases.

An adult can choose his or her diet. But what can a poor foetus do? It has to depend on its mother’s nutrition status. The bombshell of foetal origins of adult diseases is becoming more and more worrisome, since type 2 diabetes is assuming epidemic proportions. According to D. J. P. Barker, the author of this hypothesis, the combination of small size at birth (intrauterine malnutrition), and accelerated childhood weight gain, is associated with large increases in the risk of diabetes. Prevention of this epidemic lies in (1) promoting foetal growth by protecting the nutrition and health of the girls and young women, (2) protecting growth in the first year after birth, and (3) preventing rapid weight gain in early childhood. Podgy babies may be pretty but not healthy.

Dietary magic for preventing degenerative diseases is – functional foods, which are rich in health-promoting antioxidants and detoxicants (nutraceuticals). The plenary symposium on traditional health-promoting foods of Asia provided some interesting insights. The presentation of Selvamurthy on herbal foods for Indian armed forces represents one of the few systematic studies in India on scien-
tific evaluation of some herbal medicines mentioned in ayurveda. According to K. Ohigashi, Asia is rich in plants with anti-cancer phytochemicals. Traditional Indian spices are health promoting, says Kamala Krishnaswamy, quoting work done on turmeric and fenugreek – the former an anticarcinogen and the latter anti-diabetic.

But then food is not the only thing. If you want to age with grace, and be in good health, not only must you eat plant foods (rich in nutraceuticals) and fish (rich in Omega-3 fatty acids) but you must also perform regular strength-training exercises, advises Mark Wahlquist, on the basis of global studies.

Apart from Omega-3 fatty acids, the micronutrient that has hogged attention in recent years is vitamin A. Besides its known role in vision, it has been prescribed as the magic nutrient to promote growth, reproduction and more recently to prevent morbidity, and mortality. However, a recent study from Tanzania (W. Fawzi and A. Chatterji) cautions against administering vitamin A to pregnant women suffering from HIV infection, because it was found to increase the mother-to-child transmission of HIV infection.

One of the less recognized nutritional deficiencies is zinc deficiency. While clinical deficiency may not be rampant, it does have functional impact in terms of cell-mediated immunity (A. S. Prasad) and cognitive performance (H. H. Sandstead) among other effects related to growth and differentiation. Beneficial effect of zinc supplementation in respiratory infections in Indian children was reported by M. K. Bhan and in cholera and diarrhoea in children of Bangladesh by S. K. Roy. An important question pertains to micronutrient requirement in infections. Infections like respiratory infections lead to increased urinary loss of some of the most limiting nutrients like vitamin A and riboflavin due to altered metabolism and impaired utilization (M. Bamji). Should nutrients be poured in a leaky pot?

Besides nutrients, probiotics (right cocktail of microbial organisms to colonize intestines) can play an important role in prevention as well as treatment of intestinal disorders. The symposium ‘Probiotics in disease management’ explored this role.

Major micronutrient deficiencies like iron deficiency anaemia, iodine deficiency diseases, and vitamin A deficiency which continue to be public health problems were discussed, the thrust being on strategies and programmes for their prevention. Dietary approach was stressed. Despite abundant sunlight, Indians do show evidence of vitamin D and calcium deficiency, according to Kochupillai. The question of calcium requirement and deficiency needs greater attention, because calcium deficiency hits the children (stunting) and the elderly (osteoporosis and osteomalacia). Ann Prentice brought out the current concepts and controversies in this regard. Nutrition problems of infants, children, adolescents and elderly, were all discussed by experts.

Among the strategies for preventing micronutrient deficiencies, home gardening and food fortification were discussed in separate symposia. The latter is receiving considerable attention in India despite the problem of bioavailability and limited choice of food items that can be fortified. But ultimately there has to be community-based approach for household food security and nutrition well being. The experience of Bangladesh in home gardening is noteworthy (A. Talukdar). FAO’s programmes in promoting household food security and nutrition were discussed by B. Nandi.

Food technology coupled with food safety are needed not only for promoting nutrition security but also for economic prosperity. India needs to improve its performance on both the fronts. There has to be greater interaction of nutritionists with industry, to enable food industry to contribute towards nutrition security. Food safety evaluation using the HACCP approach is needed for street foods to export-quality processed foods.

Good research demands state-of-the-art technology. Research using stable isotopes has not only helped to objectively assess the problem of malnutrition as well as degenerative diseases, but has also contributed to its prevention as seen from some of the international studies sponsored by the International Atomic Energy Agency.

The very well-organized IX Asian Congress of Nutrition was scientifically stimulating and provided food for thought for each country to evolve its own nutrition goals and strategies for achieving them.

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Earth system processes related to Gujarat earthquake using space technology*

An International Workshop on Earth System Processes Related to Gujarat Earthquake using Space Technology was

*Based on the International Workshop on Earth System Processes Related to Gujarat Earthquake using Space Technology, held from 27 to 29 January 2003 at IIT, Kanpur.

inaugurated by Vinod K. Gaur (Indian Institute of Astrophysics, Bangalore). He gave a talk on the ‘Bhuj earthquake’ and highlighted the Global Positioning System (GPS) results and their importance in understanding the dynamics of the Indian plate. This workshop was attended by 80 participants from various research and academic institutions in India.

Seven foreign scientists participated in the workshop from NASA (USA), Germany, Russia and China.

D. Bannert (UNESCO, GARS Program) presented a paper related to Indian–Eurasian collision in Pakistan; he pointed out that a number of basement faults developed within Indian plate during the collision. Presently these faults are con-