

Herbal medicine and natural drug research*

In a modern world where prescript medications often carry a huge list of potential side effects, it is important that we look at the value of herbal remedies. Herbal medicines are the synthesis of the therapeutic experiences (of over hundreds of years) of generations of practising physicians of indigenous systems of medicine; comparatively, nutraceuticals are nutritionally or medicinally enhanced foods with health benefits of recent origin and marketed in developed countries. Natural medicines are in great demand in the developed world for primary health care because of their efficacy, safety and lesser side effects. They also offer therapeutics for age-related disorders like memory loss, osteoporosis and immune disorders for which no modern medicine is available that can be as effective as natural drugs.

An effort was made to bring forth the importance of herbal medicines by organizing a two-day conference. The main aim of the event was to provide a platform for the participants to interact and share their views with academicians and scientists working on different aspects of herbal research so as to open a new natural therapeutic era. There were more than 500 participants from all over the country and 250 research papers stressing all aspects of medicinal herbs were received, duly focusing the objective of the conference.

An important moment of the inaugural function was the release of the book entitled *Herbal Perspectives: Present and Future* (ISBN: 8189304-91-7) edited by T. Parimelazhagan, S. Manian and M. Pugalenthi. The principal objective of this book has been to collate the latest information and to review the view points of eminent investigators who excel in the area of herbal research. An attempt has been made to encapsulate scientific information pertinent to ethnomedicine, pharmacology, phytochemistry, post harvest technology, antioxidant potential

and bioinformatic tools involved in herbal research and value addition of herbals. The book will be useful for students and professionals in the field of pharmacy, ayurveda, unani and siddha.

Six scientific sessions were included: (1) traditional medicine and biodiversity conservation, (2) ethnomedicine and ethnopharmacology, (3) quality control and assurance of herbal products, (4) intellectual property rights (IPR) in herbal medicine, (5) role of biotechnology and bioinformatics in herbal medicine, and (6) phytochemistry and nutraceutical development. A total of 12 lead lectures by well known scientists and 135 papers for oral and 104 for poster presentations were categorized. Three best poster and paper presentation awards were given for innovative research findings in this area.

S. Manian (Bharathiar University, Coimbatore) highlighted the importance of the conference through his welcome speech. C. Swaminathan (Bharathiar University) stressed on the importance of herbal medicines and pin-pointed that legislative control has not evolved as a structural model in India. He emphasized the need and urgency in preserving our cultural heritage of herbal medicine by scientifically exploring them. T. Parimelazhagan (Bharathiar University) emphasized the need for the use, exploration and conservation of medicinal herbs. He said that an effort has to be made, using scientific and technical capabilities and a holistic and traditional approach, to meet challenges in this area of research. G. Ilavazhagan (Defence Research and Development Organization, New Delhi) suggested that the demand in the global market for herbal medicines can grow up to US\$ 7 trillion by 2050. Hence, there is an urgent need for the documentation of medicinal plants and its standardization to make it acceptable in the modern era. L. Balaji Saravanan (Coimbatore City (Law and Order), South Sub Division, Coimbatore) spoke about the importance of patenting resources to protect our heritage. He stressed that the use of herbs is not new and has its relevance from ancient times. Today these indigenous medicinal herbs are subject to increased destruction.

K. Radhakrishna (Defence Food Research Laboratory, Mysore) delivered the initial key note lecture and emphasized the need for herbal medicines and their applications in functional foods. Further, he stated that food plants provide a regulated source for delivery of functional compounds. He pointed out that the most common and widely utilized herbs have been found to directly or indirectly affect mental and physical performance. Vanya Orr (The Earth Trust, The Nilgiris) mentioned certain culturally significant plant species like *Eriochrysis rangacharii* (*Avful*), *Syzygium cumini* (*Bhaershmaan*), *Litsea glabrata* (*Nelicolu*) and *Rhodomyrtus tomentosa* (*Thavuta*) and some medicinally potential plant species like *Rhaphidophora pertusa* (*Bipary*), *Baceolopsis nervosa* (*Barly kodi*) and *Biophytum intermedium* (*Nell ullu mathiga*) from various tribal groups. She stressed that their conservation and sustainable use is of utmost importance in the context of biodiversity conservation. The relevance of ethno medicinal knowledge was clearly put forward by Anil K. Goel (National Botanical Research Institute, Lucknow). According to him, traditional knowledge in our country has survived due to its strength, proven efficacy and drug formulations taking care of the health requirements of people.

Patentable tissue culture based process and product development from native medicinal plants was the area dealt by S. Seeni (Sathyabama University, Chennai). In his lecture, he discussed interesting possibilities and opportunities in the collection of raw materials, drying and sale of raw materials for a few rupees per kilo in street markets, extraction and conversion to dosage forms through scientific validation and marketing of the finished goods in value added forms. He also showed the high medicinal value of secondary metabolites like plumbagin and hypericin from the species of *Plumbago* and *Hypericum perforatum* respectively.

G. M. Kannan (Defence R&D Establishment, Gwalior) made it clear that many people mistakenly think that all medicinal herbs, being natural, are generally safe and free from undesirable side

*A report on the National Conference on Herbal Medicine (NCHM) organized by and held in the Department of Botany, Bharathiar University, Coimbatore, during 8-9 September 2010.

effects while acting as effective agents. He suggested that experience, education and good information about herbs as well as satisfactory quality control would make consumers, physicians and researchers more open to and confident of the herbs. M. Ramanathan (PSG College of Pharmacy, Coimbatore) expressed that modern drug discovery processes have started revisiting traditional knowledge and ethnopharmacological approaches to reduce the typical innovation deficit faced today. This would help in developing countries like India reach the top in science.

The lecture by Rama Swamy Nanna (Kakatiya University, Warangal) proposed recent biotechnological strategies like the biotransformation technology which allows the reproducible production of active pharmaceutical ingredients of high quality and efficient screening of new bioactive molecules. This technology is also useful in the enhancement and recovery of pharmaceutically important compounds like steroids, alkaloids, coumarins and terpenoids.

The preservation of indigenous knowledge is at risk because it has never been documented. It is being forgotten as it is replaced by modern education and technology. Indigenous knowledge has value not only in the culture in which it evolves but also for scientists and planners striving to improve conditions in rural, tribal and urban areas. These were the significant views of T. R Sahu (Dr Harisingh Gour University, Sagar).

K. R. Maruthi (Shri Dharmasthala Manjunatheshwara College (SDMC), Ujire) described the IPR scenario of traditional knowledge and herbal medicines. According to his views, traditional knowledge is often misappropriated because it is conveniently assumed that

since it is in the public domain, communities have given up all claims over it. Unregulated access may lead to endangering of genetic resources and plants of high economic importance.

S. A. Chenthil Kumaran (Bio Ages Consultancy, Chennai) drew the importance of intellectual property (IP) and herbal medicines, and highlighted the roles played by the consumers and producers of herbal medicines. He addressed the question of what is being protected by IPRs; summarized current discussions on IP and the Convention on Biological Diversity; and concluded with some suggestions to orient the focus of discussions on IP and herbal medicines more closely to health concerns.

Apart from the invited talks, several innovative research papers produced by young researchers were featured in the conference. There were oral and poster presentations on 'Antioxidant activity of two popularly consumed tree leafy vegetables *Tamarindus indicus* L. and *Pisonia morindifolia* Br' by R. Gomathi (Bharathiar University), 'Anti-inflammatory effect of polyhedral formula in hippocampus and cerebral cortex following ICV (intracerebroventricular) infusion of poly I:C' by Rakesh Kumar Banote (Jiwaji University, Gwalior), 'Cost optimization technique to extract picrocides from *Picorhiza kurroa* Royel. Ex Benth. – a pharmacological active compound for respiratory and hepatic diseases' by Ashish Maheshwari (Karpagam University, Coimbatore), 'Molecular characterization of *Ocimum* species using RAPD markers' by Mona Bidanjiri (SDMC), 'Saponins role as vaccine adjuvants' by Sharon Koshy (Karunya University, Coimbatore) and 'Study of antiviral properties of *Eupatorium odoratum* against Chikungunya virus: a computational approach'

by P. S. Sreejisha (Kerala Agricultural University, Thrissur).

N. Krishna Kumar (Institute of Forest Genetics and Tree Breeding, Coimbatore) stressed that medicinal plants are national resources which need conservation and augmentation. He said that the concern today is about the cause of depletion of medicinal plants and the dwindling of the source of medicinal plants. Lack of availability of medicinal plants has led to adulteration, species substitution and replacement of essential ingredients in drug formulations. He recalled the excellent conservation efforts taken up in Tamil Nadu, Kerala and Karnataka through the establishment of Medicinal Plants Conservation Areas and Medicinal Plant Development Areas by the forest departments. The need for a laundry list of potential medicinal plant actions to enable the scaling up and leveraging of medicinal plant conservation and augmentation in the country was stressed. Krishna Kumar also put forward the idea of demo herbal gardens in universities and colleges. He emphasized on capacity building for stake holders and establishment of medicinal plant seed centres and herbal plant growers' co-operatives and federations to boost the medicinal plant sector. He added that in order to build awareness, there is need for more such conferences and workshops.

In a nutshell, the conference created an opportunity for scientists, teachers and students from all over India to have a close look at the present and future of medicinal plants research.

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