

# CURRENT SCIENCE

Volume 106 Number 5

10 March 2014

GUEST EDITORIAL

## Traditional knowledge, wisdom and Ayurceuticals interfacing with modern science – a boon for a healthy India tomorrow

The integration of health, food, nutrition, lifestyle and Ayurceuticals derived from Ayurveda is special to India. This integration has happened in the cascading epidemiological evolution of this country, integrating the art of agriculture to the region and the benefit of such agrowth with health and wellness of an individual. In this process, the raw material either from land or water has to undergo several steps of harnessing the growth per se of the biodiversity, harvesting and transportation, all the way to hygienic consumption and food processing at the kitchen and community level, which involves other parameters as well. The unique combination of cereals, pulses, legumes, millets, meat, fish, poultry, spices and condiments along with a large number of herbs, is something typical of the Indian subcontinent. Today, that integrated process is somewhat distilled to molecular approach, almost mimicking the pharma industry. But the focus of the holistic and integrated approach is something, which cannot be lost in the context; hence the emergence of the popular healthy nutrition and nutraceuticals through food-based approach. It is not pharma versus nutra, but nutra with pharma! This also converges and cascades today the areas of biotechnology, bioinformatics, nutritional sciences, nutraceuticals, nanotechnology along with the understanding of the mechanism of Ayurceuticals, regulatory barriers being converted into regulatory opportunities on a science-based approach and creating a healthy food and dietary habit out of this knowledge to reach out from paediatrics to geriatrics, including the new approach of bioactives for a healthy lifestyle – the definition of Ayurveda. This also demands a global partnership of knowledge with a focus on the entire chain of operations oriented towards science-based and evidence-based processes, rather than just the generation of end-product.

The traditional and ethnic knowledge leading to the product, many a times, involves a large number of steps in the process leading to the end-product, and even if one step is missing the end-product can be different. However, the focus of process orientation is now lacking and

product definition has overtaken the process mechanism through branding and explosive marketing. Also, 'food safety' has to be rigorously implemented and the claims that are made have to be supported by science and evidence-based documentation, not to undermine the rich epidemiological generation-to-generation documentation in India. In fact, it is an added advantage. If the science-based evidence has the support of epidemiology and the generation-to-generation data being handed down, the claims will get more validation than just either one of them. This is something that India has neglected for long. However, it is this distilled knowledge of ancient wisdom through traditional Indian medicine and traditional foods and traditional knowledge of processes that need to be used for furthering the efficacy of a group of molecules from a holistic and integrated approach.

It is this revolutionary approach of preventing diseases going beyond nutrition and nutraceuticals that has taken a lead role in today's dietetics and herbal approach. However the R&D investment in the area is pitifully dismal. This fascinating field demands a clear convergence of biotechnology, bioinformatics, nutritional sciences and sustainable agriculture with an all-inclusive approach with reverse pharmacology and global partnership. In this context, many people have raised the issue of the developed and developing countries. Heritage countries like India and China are far more 'developed' along with the traditional knowledge, including traditional wisdom of medicine and food through bioactives compared to the 'developing' western world, which lack them. Prevention of diseases, as well as delaying and managing diseases, have become important factors of defining the quality of life beyond medicine with affordability. Therefore, linking of ethnic knowledge with the present state-of-the-art in science and medicine, is certainly a demanding agenda.

Biodiversity and the preserved and documented database are simply a treasure-house of information on the classical use of herbs, condiments, spices and plants for integrated health and wellness. Here, one should remember the massive effort of CSIR-India in developing the

Traditional Knowledge Digital Library (TKDL) with a model networking of multi-organizational set-up.

The documentation of food and culture, and health has been aptly described in documentations like *Aaharadhikaranam* and *Bhojanakutuhalam*. This needs to be applied into translational nutraceutical science involving the basics of food science and food technology in a challenging multidisciplinary endeavour, with a constant monitoring of the reach out to society. Chemistry and physiology have to play a major role in the conceptual agenda of digitization and digestion on the one hand, and the new lifestyles and drug therapies on the other. It is the delicate balance that needs to be struck for new drug development and also massive public campaign of what to eat for those who can afford it while at the same time providing the minimum nutrition to those who critically need it.

Awareness of dietary guidelines both in the rural and urban set-up has changed the lives of many people for the better. However, the role of nutraceuticals and Ayurceuticals has been greatly undermined due to lack of understanding of the mechanism of action of these molecules and the food that we eat and its Ayurceuticals content. Therefore, ingredients which are well understood, stand a better chance of acceptance and more importantly, the concept of nutrigenomics webs massively through education, information and awareness for providing fuel for a healthy body and mind for the population through science-based approach.

It is time we use them for the benefit of the society with a modus operandi of open source documentation and produce nature-similar or nature-identical molecules to use and popularize this traditional knowledge for a healthy society.

Thus the knowledge base of traditional food, traditional wisdom and traditional knowledge of medicine combined with modern science can be productive. Industry, academia and R&D interface in the health triangle, through the intervention of the medical institutions, doctors and sociologists, are necessary to make the country unique to combine these with the approach of 'Healthy

Team India' for a 'Sustainable Healthy India 2022'. This is possible provided we have a clear pathway, mega funds allotted, rigorous monitoring, reach out to the already available science and technology to the people and ensuring affordability with a factor of food safety, which can make the difference.

India cannot afford to lose children below five years of age; approximately three children die every minute due to lack of adequate nutrition or timely medical help.

It is a real challenge for the Government and the society at large to prepare about four billion meals every day. Therefore, the agenda is not just science-based, but is also economy-based, policy-based, sociology-based and sustainability-based, with change in the lifestyle of the public and the affordability index through affordable agriculture which need attention as emphasized by M. S. Swaminathan: 'If agriculture fails, everything else will fail'. It is this caution that we ultimately have to remember to be a self-sufficient in agriculture, but at the same time minimize food losses. The 2022 agenda must ensure that there are no deaths due to malnutrition, lack of medical aid at the right time or due to hidden hunger.

The mission of nutrition and nutraceuticals and Ayurceuticals and basic medical welfare measures for the mother and child will definitely ensure an all inclusive growth in the country. The scientific fraternity, industry, politicians, policy-makers, NGOs, etc. must all join together to eliminate hunger and poverty. Can we expect India to be a very healthy country in 2022 based on traditional knowledge? I am confident that we will be able to achieve the same much earlier provided we work harder to reach our goals, since every minute delay is taking away three precious lives.

V. Prakash

CSIR Distinguished Scientist at JSS-MVP,  
JSS Technical Institutions Campus,  
Mysore 570 006, India  
e-mail: prakashvish@gmail.com