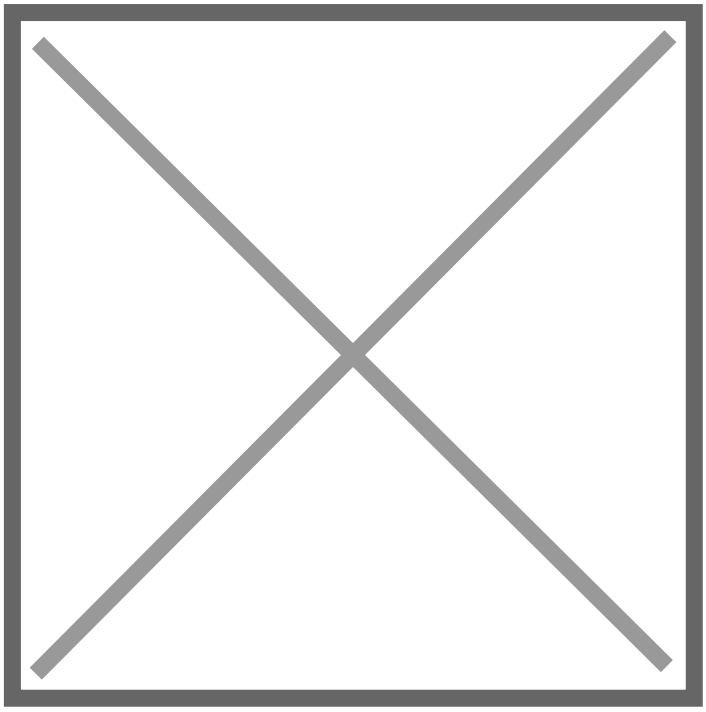
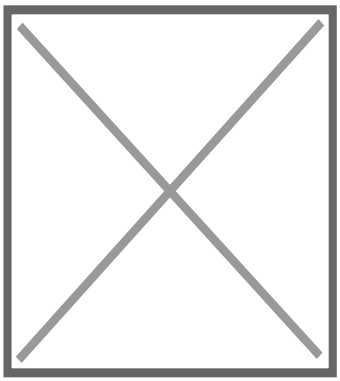
BioSpect
the business of Bi
24 years of leveraging the business of Bio
www.biospectrumindia.co

"India can emerge as a food biotech leader"

07 December 2005 | News



"India can emerge as a food biotech leader"



Â

Dr V Prakash, Director, Central Food Technological Research Institute (CFTRI), Mysore.

Dr V Prakash has been steering CFTRI to higher orbits of science and technology and in dissipating appropriate technologies to producer and grower on one hand and small entrepreneurs on the other, with a focus on economic upliftment and employment generation by promoting adaptable technologies with a sustainability built into it. In an exclusive interview to Namratha Jagtap of BioSpectrum, the Padma Shri awardee who is also the Chairman of the Karnataka Biotechnology Development Council, speaks about the developments in the institution and other plans for its role in food biotechnology.

What have been the highlights of CFTRI in 2004-2005?

CFTRI has registered 100 patents in a year for the fourth consecutive year in 2004-2005 underlining its technological prowess in the field of food science and technology. During 2004-05, CFTRI transferred 54 processes and technologies and three designs to 84 entrepreneurs. Nearly 225 technologies have been transferred to entrepreneurs / industries in the past five years. As many as 275 new industries have been set up based on the technology packages from the institute covering important sectors such as fruits and vegetables, spices, traditional foods, bakery products, meat and fish products, and food machinery.

In continuation with its societal mission, the CFTRI established two major fruit processing units Ã¢â?¬â?? the MATA Foundation in the north-east near Imphal in Manipur and the Vivekananda Girijana Kalyana Kendra at BR Hills in

Chamarajanagar district of Karnataka. A large number of industry personnel were trained last year and were exposed to high-end science and technology. Nearly 7,000 enquiries from entrepreneurs and industries were processed during the year.

Over 2400 entrepreneurs have availed CFTRI technologies, besides adding value to agricultural produce in the past 54 years. Technology for making energy foods and other nutritional foods meant for improving the health of the underprivileged have been utilized by a large number of entrepreneurs. Entrepreneurs form a vital link in the chain of research and development-market-consumers and are sharing the burden of outreaching the fruits of research and development carried out by the institute to the consumer. An estimated ~50,000 tons of agro-produce is being imparted value-addition every year by these entrepreneurs and an additional ~ 20,000 tons of convenience food and snack foods will undergo processing by the licensees of CFTRI in these areas. The investment envisaged from these licensees during 2002-05 is around Rs 250 crore. Nearly 7,500 direct employment opportunities and 40,000 indirect jobs in the food sector are expected to be created as a result of such opportunities. The institute has also published on an average ~130 scientific papers and 2004-05 is no exception.

The other highlights of 2004-05 are that, CFTRI is now ISO 14000 certified in the area of environment management system. The Human Resource Development activity was notable with 60 students getting their post graduation degree and milling certificates and PhD degrees along with nearly 1000 small and medium entrepreneurs being trained. We have also established the state-of-art NMR facility and dedicated it to the Nation recently. India is one of the world's largest agro-resources, and it is CFTRI's endeavor to make the maximum use of the resource base through research and innovation.

CFTRI has a biotech wing in the institute. What is the kind of research happening there?

We touch biotech in almost all our departments like Biochemistry and Nutrition, Food Microbiology, Fermentation Technology and Bioengineering, Protein Chemistry and Technology, Lipid Science and Traditional Food and Grain Science Technology to name a few. Our focus in CFTRI is in providing safe, hygienic and quality food to the consumer through the entrepreneur. When I say safe, one is looking at absence of pesticides, pathogens, toxins, heavy metals, or any other unintentional or intentional contaminants. The second aspect is hygiene. When we look at hygiene, we also talk of health foods. When we look at health, we have to look at nutrition, a holistic approach in food. The third angle we are very keen is the quality. Quality is not just composition. We have to look at aesthetic and sensory values. Quality is perceived by the consumer. There must be a happiness index of "delight" for a person when he eats food. The taste, the nutrition and the "crunch" in it should appeal to him or her. For example, the sound that you get when you bite into a fresh apple is quite different from a month-old apple. Both are perhaps okay from the food technology point of view but the sound that you get from a fresh one is perhaps more enjoyable! So there is an element of "delight" in it. Our challenge is to bring about the same "delight" in a month-old apple along with retaining the nutrients, which is not so easy and this requires biotechnological approach. This also requires a tremendous amount of integration of different R&D areas. Therefore we need to integrate all these, right from the farm to the consumer. I would call it the FCF concept - farm to consumer to farm as it is a cyclic approach. In between we have a long chain of operations Ã¢â?¬â?? harvesting, transportation, storing and ultimately processing. Hence, the role of biotechnology is very critical and also very important in today's food processing.

What are the current developments in the institute?

In a broader sense, we look at five different areas of biotechnology in the institute. One is the area of natural food additives. It could be natural color from a plant source or even a natural sweetener. Consumers today are looking at biotech products mainly because of their assured quality and perhaps cost effectiveness. One good example is the natural vanilla and we are working on it. Why do people still prefer natural vanilla over synthetic vanillin? Natural vanilla offers a spectrum of flavors whereas the synthetic vanillin has a narrow bandwidth of flavor. CFTRI is also working on natural anti-oxidants and related bioactive molecules.

The second area is health foods and in biotechnology. These days people want the best out of their food in terms of taste as well as nutrition. For example, one may like a dessert to digest dinner! We may like to have butter on the toast but without the fat in it! All this can be made possible perhaps using 'molecular mimicking'. You can mimic on your tongue a carbohydrate or protein molecule similar to oil and this requires high science of enzyme engineering and food technology. Attention today is towards health conscious food and preventive aspects of diseases especially in the processed food area.

The third area is biotechnology and its role in detection of contaminants. For example, one may require a "biotech kit" to detect traces of pesticide, herbicide or fungicide in food. Or one may even require a biosensor to detect a heavy metal or toxin or to ascertain whether a food has a GMO (genetically modified organism) in it or not. These are all at the lab level today but are going to be a reality tomorrow. Today people do care for food safety and quality and is an emerging awareness even in rural and semi-urban areas let alone urban. A paradigm shift indeed.

The fourth area is development of "exotic molecules" which have become very important today. A systematic experimental search for exotic molecules includes prebiotics also. Also molecules which are termed 'bioactive' and their role in food processing and value addition in the market place is emerging out.

The fifth aspect is nutrition. The nutrition label on a food product and how much our body absorbs is perhaps two poles apart many a times! We need to focus on increasing the bioavailability of nutrients, i.e. we need to ensure that all the nutrients go into the body without anything being thrown out of our system. That's not easy. I am glad to mention here that both Dr RA Mashelkar, Director General, CSIR and Dr MK Bhan, Secretary, DBT have emphasized the need for nutritional reachout in the programs of CSIR and DBT respectively. This is so refreshing and enthuses a large number of scientists in the area of nutrition.

These are fundamentally five important areas in biotechnology where we are focusing in CFTRI as a food research institute leveraging the knowledge of biotechnology. There are many more and the list can be long.

What are the areas in which CFTRI has tie-ups with food organizations and other institutes?

CFTRI is a dynamic and a very outward looking organization with a dynamic inward higher benchmarking organization. We are working on nutrigenomics which is an important area. We are collaborating with 10 other laboratories of CSIR and with many others outside of CSIR. We also have these programs which will provide positioning Indian nutraceuticals industry to be on the map of the world perhaps to be leaders as we move towards food with preventive aspects of diseases the world over. Thus food biotechnology will occupy a forefront in this area.

We also work with a large number of industries in developing new products. Today there are more biotech companies approaching us than ever before. There are people looking at a product which has a biotech approach and it need not necessarily be always GM. The other set of people reaching CFTRI today are the biotech industries who want to utilize byproducts to the fullest. And this is where the challenge for tomorrow lies in. Today majority of the population in our country does not get micronutrients such as iron, iodine, zinc, vitamin A and folic acid. Here the traditional food plays an important role and with as many as 3,700 documented traditional foods, we have to make best use of it and also extend this knowledge base to the rest of the world. There is high science, deep biotechnology and business in it of course protecting our IPR throughout.

What are the new products that CFTRI has to offer and what products are in the pipeline?

There are several products in the pipeline in the biotech area. We are in a fairly advanced stage in the area of fructo-oligosaccharide based products. We have also offers in the area of biotransformation of health oils. Another important product is high quality protein flours which are used in bakery products for complimentary and supplementary foods which are nutritionally fairly complete from a biotech approach.

We also have a number of nutraceuticals in the pipeline (with a biotech approach using enzymes) and also a few natural food additives. Besides, we have many natural colors from biotech processes, which are already transferred to industry and some others are in the pipeline. We also have processes for the manufacturing of bulk food additives like anti-oxidants and couple of biotech kits for pesticide and pathogen detection which are ready for transfer to the industry. These are just to name a few.

What do you feel about the Indian biotech scenario today?

Many people may not be aware of the knowledge base and infrastructure available in an institute like CFTRI. There is this mindset of titles! Generally people would not connect CFTRI with biotech. However, I strongly feel that the biotech industry should be perhaps more open and there is a need for continuous industry-institute interaction and mutual co-operation and networking is very crucial. An ideal scenario would be what I call as 'corridor research' which will facilitate smooth exchange of information, greater understanding between industry-institution and ensure that biotech researchers in institutions have access to the industry for R&D and R&I and vice-versa. In fact by such an interaction, ideas perhaps are not be taken away but are value-added. Networking between biotech laboratories is also equally important. Also we need to focus on regulatory aspects. We must have a clear regulatory framework in food biotechnology for the country and also the clear demarcation between basic nutrition, nutraceuticals and bioavailability of such bioactive molecules for better health and wellness in society.

We need to have a clear pathway for nutritional supplements and nutraceuticals regulatory systems as it is an important issue for biotech products for tomorrow, which are especially food based.

I have no doubt that India can emerge as a food biotech leader especially with institutions like CFTRI which networks with other academia, institutions and industries to ultimately to foster public-private partnership with the reachout to the unreachable with economic development and job opportunities created along with it for nurturing the concept of a sustainable global biovillage.