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CFTRI bags National award for Excellence in Consultancy Services

CFTRI received 'Certificate of Merit' for Excellence in Consultancy Services instituted by the Consultancy Development Centre, New Delhi (Department of Scientific and Industrial Research, Govt. of India) for the successful implementation of the project, "Integrated Pilot Scale Fruit Processing Unit" promoted by M/s. Rishang Keishing Foundation for Management of Tribal Areas (MATA), Imphal, Manipur. The award was received by Dr. K.N. Gurudutt, In-charge Director, CFTRI, from Mr. Tejendra Khanna, Chairman, Ranbaxy Laboratories Ltd. on January 15, 2007 in the inaugural session of the Ninth National Consultancy Congress on "**Consultancy and Services: Global Market**", in the presence of an august audience at India Habitat Centre, New Delhi.



Dr. K.N. Gurudutt, In-charge Director, CFTRI receiving the National Award from Shri Tejendra Khanna, Chairman, Ranbaxy Laboratories Ltd., in the inaugural session of the Ninth National Consultancy Congress in New Delhi. Shri PCS Nambiar, Project Coordinator, CFTRI is also seen

About this consultancy project

Manipur hills are famous for diverse crops, such as pineapple, oranges, lime, lemon, papaya, banana, plum, peach, berries and passion fruits. The people of the state are mainly engaged in the cultivation of paddy and horticultural crops. The State Government, the North Eastern Development Council and the Central Government have been promoting horticulture plantation in the hill areas to improve the living standards of the local population.

In this background, an integrated fruit processing facility at Litan, as part of a new Food Industrial Park at Thotchanram, Ukhrul district, was initiated. The unit is equipped to process 5000 MT fruits, such as pineapple, oranges and passion fruits per annum. The project will benefit about 38,000 Jhumia families and envisages income generation of Rs.11.8 crores along with other projects being implemented in the Food Park.

As per the MoU, Central Food Technological Research Institute, Mysore was entrusted with providing total turnkey solutions comprising of the engineering aspects, erection of the plant and machineries, training on plant administration and production of various fruit products. The DSIR, Govt. of India under PATSER scheme and Ministry of Food Processing, Govt. of India and CSIR provided the requisite financial support.

The novelty of the process is the application of the Membrane Technology for the clarification and concentration of pineapple and orange juices with the micro-filtration and reverse osmosis. The clarified juice is also suggested to be used in the canning of slices instead of sugar syrup.

The advantages of membrane processing include low energy consumption, minimal thermal damage to heat sensitive components, retention of natural flavours, improved yield, cold sterilization and lower operational cost. A compact membrane filtration unit to match the capacity has been installed at the plant along with other



A view of the Membrane Processing Unit at Integrated fruit juice processing plant, Litan, Imphal - the plant was setup by CFTRI for MATA Foundation

processing systems, such as pasteurization, vacuum concentration, canning and bottling for extraction of pineapple, oranges and other fruits and to make various value added products. The unit is expected to create direct and indirect employment generation of around 1000 people.

The Triumph

Transportation of capital goods, materials and mobility of the project team to the site were affected time to time due to the prevailing conditions in the state. The locational disadvantage was another factor that too influenced the project execution.

The project team scaled up the membrane processing from laboratory scale to pilot level to suit to the requirements. Technical personnel were trained to take up handling of raw materials and the processing of number of products hygienically based on various technologies developed by CFTRI. The plant was successfully commissioned in April 2006.

National Science Day

National Science Day was celebrated on 28th February, 2007 at CFTRI, Mysore. Prof. A. Krishna Bhat, Professor of Physics (Retd.) and Popular Science Writer graced the occasion as the Chief Guest.

While speaking on “Raman Effect: The Discovery and the Current Status”, he urged the national laboratories and academia to make efforts to bring into light the significance of Sir Raman’s discovery to young students. “Raman demonstrated the effect with simple

instruments and the spectrum was visible even with naked eyes. If we can demonstrate any experimental results with simple tools, probably it would enthuse many more youngsters,” he opined. He also distributed prizes to the winners of the various competition held as part of the celebrations. Dr. K. N. Gurudutt, In-charge Director, CFTRI, presided over the function and Dr. K. Srinivasan, Scientist, Biochemistry & Nutrition Department, proposed vote of thanks.

Royal Highness Thai Princess Visits CFTRI

Her Royal Highness Princess Maha Chakri Sirindhorn accompanied by his Excellency Mr. Chirasak Thanesuant, Ambassador of Thailand to India along with the officials from Thai Government visited CFTRI recently.

On this occasion, a brief presentation of institute’s activities with outreach to society was made by Director, CFTRI. Institute’s overall contribution in the area of human nutrition with emphasis on role of protein and the chemistry was highlighted. Later, Princess Maha Chakri Sirindhorn also visited CFTRI’s Show case,

Food Engineering Centre and Nodal Codex Food Laboratory. CFTRI’s efforts in the automation of traditional food and pulse milling was demonstrated to the visiting dignitaries.

The Princess expressed her deep appreciation on CFTRI’s prowess in the area of food science and technology, nutrition and capacity building. The Thai Princess also opined that quite a number of R&D projects in the area of food science & technology carried out by the Institute have relevance to their own country as well.

CFTRI Scientists Visit Kraft Foods R&D Centres

International Nutrition Foundation and Kraft Foods, USA, jointly awarded INF/Kraft food internship to CFTRI scientists recently. Accordingly, Dr. G. Venkateswaran, Scientist, Food Microbiology; Dr. Sridevi A Singh, Scientist, Protein Chemistry & Technology and Dr. A Jayadeep, Scientist, Grain Science & Technology were deputed under Visiting Young Scientist Fellows Programme at Kraft foods R&D centres (Chicago and Newjersey, USA) during Oct. – Nov. 2006. The program focused on integrated food and ingredients research, products innovation to

improve nutrition in developing countries along with open innovation and networking.

The program is expected to give a fillip to biotechnological process development and application of advanced techniques for quality assessment of food products at CFTRI. It would also help the institute to forge collaborative research programmes for capacity building in developing countries.

Virgin Coconut Oil

Virgin Coconut Oil (VCO) is extracted from fresh coconut meat without involving thermal treatment. The oil is colourless and has an intense coconut aroma. It is rich in lauric fatty acid and contains vitamin E. The virgin coconut oil has many pharmaceutical and cosmetic applications. It has a peroxidase value of less than 1 and free fatty acid (FFA) less than 0.2%. It has long shelf life due to its antioxidant properties. VCO is abundant in medium chain fatty acids such as C8, C10 and C12, and has a unique role in the diet as an important physiologically functional food. VCO has healthy saturated fats that helps in maintaining proper cholesterol levels, supports thyroid function, ease digestive disorder symptoms, averts hypoglycemia cravings and provides many other health benefits. The virgin coconut oil has potential as a replacement for butter, margarine and other

cooking oils. It is not stored in the body as fat, rather it is converted into energy.

The processing steps involve deshelling of matured coconuts, paring, dewatering, disintegrating, milk extraction, enzyme treatment, centrifuging, freezing and thawing and centrifugation. The critical steps involve centrifuging operations wherein cream is separated from fresh coconut milk and separation of oil from oil and cream mixture. The principal equipments required are hammer mill, screw press, centrifuge, bottle filling machine, fluidized bed dryer, pouch sealing machine and walk-in-cooler.

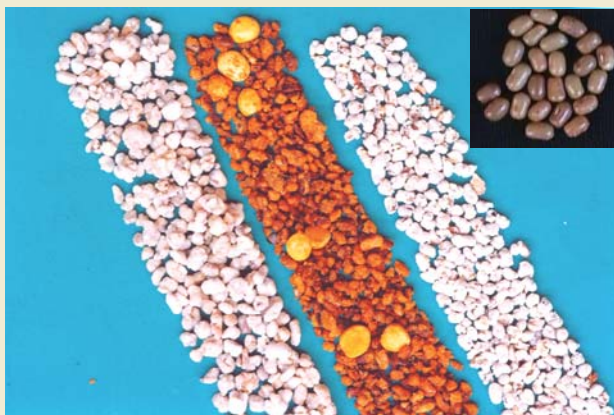


Puffed Moth Bean Sweet and Savoury Snacks

The moth bean puffed snack is a ready-to-eat (RTE) product with either sweet or salt-spicy in taste. It is suitable as a low-fat snack because frying in oil or fat has been omitted to provide a good shelf life to the product without losing the attractive taste and texture of a crispy snack. The product is cost effective and has the potential to become a health food in the near future. The product can be stored for four months at ambient conditions.

The small size moth bean fractions/ broken could be used separately in the preparation of sweet and coated products. Whole moth bean, pre-gelatinized starch powder, sugar, salt, hydrogenated fat are the materials required for the preparation of the product. Permitted food colour and flavour are essential for sweet snacks and spice powder is used for spiced snack

products. Cleaning and milling, soaking, cooking, toasting, coating/flavouring, drying and packaging are the steps involved in the processing. Plant grinders, shaker/ grader, autoclave, planetary mixer, dryer, toaster and pan coater are the important machineries required. The process is available for commercialization.



Puffed RTE moth bean products & raw whole moth bean (inset)

Process for preparation of hypoglycemic foods and formulations thereof (US Patent No. 7153528)

Diet therapy plays a major role in the clinical management of diabetes. Proper dietary schedule helps in the management of diabetes besides delaying the onset of diabetes in population at risk. Dietary recommendations for the diabetics include, complex carbohydrate backed up with adequate amounts of dietary fiber, micronutrients and nutraceuticals with insulin secretagogue and sensitizing properties.

The institute has developed a hypoglycemic food formulation containing cereals other than rice, mixed legumes, small proportion of milk solids, vegetable fat rich in essential fatty acids, spices and condiments including fenugreek, and natural herbal ingredients with insulin secretagogue and

sensitizing properties, and fortified with essential vitamins and minerals.

The cereals are scoured to remove the outermost fibrous layer, whereas, the legumes are used in the form of dhal. Cereals, legumes and spices are mildly toasted to improve the sensory attributes and blended suitably with other ingredients to prepare a ready-to-cook product. The hypoglycemic food formulation contains about 14% protein and 18% dietary fibre and exhibits moderate glycemic response.

The hypoglycemic food formulation can be utilized as a dietary supplement or as a meal replacer for diabetics. The formulation and the process are covered under Indian and US Patents.

CPYLS Programme

CSIR programme for Youth on Leadership in Science (CPYLS) was organized on January 24 and 25, 2007 in the institute.

Meritorious students from the state, who passed out in KSEE, CBSE and ICSE examinations held during April-May 2006 were invited to get the first hand knowledge and the experience of the R&D activities in the laboratory. During their stay, the achievements of CSIR and CFTRI were explained to them. Demonstrations on automatic *dosa* making and *idli* making machines were arranged and students were encouraged to have close interactions with scientists as well.

On the concluding day, Dr. K.N. Gurudutt, In-charge Director, CFTRI advocated the students to take up

research as a career. Participation certificates were distributed to the students.



CPYLS students interacting with a scientist at Food Engineering Centre, CFTRI

Awards & Honours

- **Dr. G.A. Ravishankar**, Head, Plant Cell Biotechnology Department, CFTRI, delivered Prof. V.N. Raja Rao Endowment Award Lecture - 2007 at Department of Botany, University of Madras, Chennai.
- **Dr. K. Srinivasan**, Scientist, Department of Biochemistry & Nutrition has been invited by McCormick Science Institute, USA to join as a member of Scientific Advisory Council of the institute. The McCormick Science Institute is primarily working on developing research agenda in the area of culinary herbs and spices for human health. The nomination has been in recognition to the extensive publications in the related areas by Dr. Srinivasan.

Indo - Canadian Workshop on Food Biotechnology

The Indo-Canada joint workshop on Food Biotechnology was organized on March 7 & 8, 2007 at Central Food Technological Research Institute, Mysore.

The workshop was sponsored by the Department of Biotechnology (DBT), New Delhi and Agriculture and Agri-Food Canada (AAFC) to discuss and bring out possible areas of collaboration in the areas of biotechnology between Canadian and Indian research institutions including universities.

The workshop was inaugurated by Prof. Joseph Hulse, Former Vice-President, International Development Research Centre, Canada. Dr. Rajesh Kapur, Adviser, DBT, New Delhi presented the status of biotechnological research in the country. Delegates from Canada

presented an overview of activities at AAFC, Canadian institutions and universities.

Dr. K.N. Gurudutt, In-charge Director, CFTRI, Mysore gave the presidential remarks. The Canadian delegation later visited various centres of excellence at CFTRI. The workshop had 5 technical sessions covering the areas of functional foods, post-harvest technology, nutrition and micro-nutrients, nutraceuticals and process engineering.

The workshop concluded with a round table discussion. Various research areas for mutual collaborations between Indian and Canadian researchers, scientists, academicians and professionals were identified for further consideration.

Public Accounts Committee's visit

Public Accounts Committee (PAC) under the Chairmanship of Prof. V.K. Malhotra and Members of Parliament visited CFTRI on January 19, 2007 to study the overall performance of the institute. Members of the PAC visited various R&D facilities in the institute and interacted with scientists and technologists.



Prof. V.K. Malhotra, Chairman, PAC along with other Members interacting with scientists during their visit to CFTRI

European Union Commission (EUC) Delegation at CFTRI

An European Union Commission delegation, lead by Mr. Jose Manuel Silva Rodriguez, Director General, EUC along with Mr. Indraneel Ghosh, S&T Adviser for EUC at New Delhi, visited the institute recently.

The delegation interacted with Director and Heads of the various R&D departments and spelt out programmes covered under EUC in the areas of Research & Development, Capacity building and conducting workshops. The delegation was in the country appraise R&D institutions about opportunities for collaborative research programmes under the revised financial support system of EUC.



Delegates of the EU Commission at **Showcase** during their visit to CFTRI

Forthcoming events

Short term training programmes (May - July 2007)

- Changing scenario of Indian fast foods (07 – 11 May 2007)
- Laboratory animal techniques: Ethics & Welfare (14 – 18 May 2007)
- Approach to proximate analysis of foods (21 – 25 May 2007)
- Physical properties of foods: Measurement of the quality attributes (28 May – 1 Jun. 2007)
- Molecular biology techniques in microbiology (04 – 08 Jun. 2007)
- Flexible packages for food applications (11 – 13 Jun. 2007)
- Fumigation, prophylaxis and pest management techniques for stored products (15 – 29 Jun. 2007)
- Practice of HPLC in the present scenario (02 – 06 Jul. 2007)
- Sensory analysis and consumer science: Approach towards consumer preference (09 – 13 Jul. 2007)
- Plant biotechnology and genetic engineering (09 – 20 Jul. 2007)
- Methods of pesticide residue analysis (30 Jul. – 3 Aug. 2007)

For the details on the short term courses,

Please contact :

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Visitors to CFTRI

- Dr. Rajanikanth Bandaru, Enzon Pharmaceuticals, NJ, USA delivered a talk on “GPI-2A as a drug substance for HIV/AIDS and novel drug delivery systems for genetic medicine” (February 5, 2007)
- Dr. Alice Nan Ju Lee, School of Chemical Sciences and Engineering, University of New South Wales, Australia delivered a talk on “Rapid tests and quality control systems for food contaminants detection” (February 16, 2007)
- Dr. Ram H. Nagaraj, Professor of Ophthalmology and Pharmacology, Case Western Reserve University, Cleveland, OH, USA delivered a talk on “The Maillard reaction: Good for food flavour, bad for tissue proteins?” (March 9, 2007)
- Dr. Roberto R Grau, Professor of Microbiology, Rosario National University School of Biochemistry & Pharmacy, Argentina delivered a talk on “*Bacillus Subtilis* - a model organism for basic science and functional food” (March 23, 2007)



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LEADING IN INNOVATIVE R&D IN FOOD
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