

# FoodPro

October - December 2023

Food Processing  
Nutrition  
Innovation  
Value Addition  
Traditional Foods  
Food Machinery Shelf Life  
Food Quality Nutraceuticals  
Centre of Excellence  
Pre & Probiotics PMFME  
Skill Development  
Technology Transfer  
Incubation



9<sup>th</sup> IFCON Inaugural Event  
on December 7, 2023, with  
esteemed luminaries



Product Launch by  
Dr. N. Kalaiselvi, Sec. DSIR, DG-CSIR,  
on Nov. 3, 2023, at World Food India



ಸಿ.ಎಸ್.ಐ.ಆರ್.-ಕೇಂದ್ರೀಯ ಆಹಾರ ತಾಂತ್ರಿಕ ಸಂಶೋಧನಾಲಯ, ಮೈಸೂರು  
ಸೀಎಸ್‌ಒಐಆರ್-ಕೇಂದ್ರೀಯ ಖಾಘ ಪ್ರೌಢೋಗಿಕ ಅನುಸಂಧಾನ ಸಂಸ್ಥಾನ, ಮೈಸೂರು  
CSIR-Central Food Technological Research Institute, Mysuru

(Council of Scientific & Industrial Research)  
Mysuru - 570 020





**Inauguration of 9th IFCON on Dec 7, 2023 by Shri S Somanath, Chairman, ISRO & Secretary, DoS in presence of Her Highness Pramoda Devi Wadiyar and other Dignitaries**



**CSIR-CFTRI Millet Showcase Inauguration on Dec 7, 2023 by Shri S Somanath, Chairman, ISRO & Secretary, DoS in presence of Director, CSIR-CFTRI & Staff**

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## Research Highlights

### Comparative Life Cycle Assessment of Wet air oxidation and dilute acid based xylitol production from wheat bran

Xylitol, a low-calorie sweetener widely used in the food and pharmaceutical industries, necessitates a comprehensive assessment of both food safety and environmental impacts for long-term sustainability. This study conducted a comparative life cycle assessment (LCA) of fermentative xylitol production from wheat bran, employing two processes: chemical-based dilute-acid (DA) and chemical-free wet air oxidation (WAO). Both processes encompass pretreatment, neutralization, detoxification, and fermentation for xylitol production. Wheat bran pretreatment, a pivotal step for optimal fermentable sugar recovery with minimal inhibitor generation, diverges significantly between the two methods. DA pretreatment, involving 1% sulphuric acid, yields higher inhibitor concentrations and lower xylitol production (1.42 g/L). Conversely, WAO pretreatment at milder conditions (170 °C, 12 bar) without chemicals results in higher xylitol production (6.134 g/L). The LCA revealed that DA-based production is dominated by eutrophication and aquatic ecotoxicity potentials, driven by chemical and electrical energy demands. WAO, being chemical-free, demonstrated significantly lower contributions to these impacts. The observed 76.9% difference in global warming potential is attributed to sulphuric acid use in DA pretreatment. Key impact parameters relevant to food safety - human toxicity, freshwater aquatic ecotoxicity, and marine aquatic ecotoxicity - show a cleaner, chemical-residue-free processing potential in WAO compared to conventional DA. This study underscores WAO's environmental and

safety advantages in the fermentative xylitol production process chain.

(Source: Bhavana B. K., Mudliar S. N., & Debnath S. (2023). Life cycle assessment of fermentative xylitol production from wheat bran: A comparative evaluation of sulphuric acid and chemical-free wet air oxidation-based pretreatment, *Journal of Cleaner Production*, 423, 138666).

### Honey/pulped natural robusta coffee technology

In the realm of coffee processing, the attention is now on pulped natural coffee, specifically the honey coffee (HC) derived from *Coffea canephora* (Robusta). This developed semi-dry technique, explored through meticulous studies utilizing <sup>1</sup>H NMR profiling, GC-MS analysis, and sensory investigations, has unveiled a host of exciting revelations that promise to redefine the coffee industry. The use of <sup>1</sup>H NMR profiling has proven to be a vital, allowing the identification and quantification of metabolites in pulped natural coffee. Pipecolate and 3-hydroxy-3-methylglutarate have emerged as unique markers, offering a fresh perspective on the chemical dynamics of Robusta coffee. The application of Principal Component Analysis (PCA) has provided insights into the variability of roasted beans. With PC 1 accounting for 87.4% and PC 2 for 12.6%, the impact of major sugars and secondary metabolites acquired through the honey coffee (HC) process becomes evident. This underscores the significance of the extended fermentation step in HC, a key factor in post-harvest quality enhancement. While honey coffee (HC) and washed coffee (WC) may share physical similarities, their sensory profiles tell a different profile. HC, with its prolonged fermentation (192 h), boasts enriched concentrations of volatile compounds, resulting in a



sensory extravaganza featuring pleasant, sweet, tea rose, and chocolaty flavors. The organoleptic attributes offered by HC surpasses that of WC, presenting an exciting avenue for quality enhancement. GC–MS exploration has identified 14 exclusive volatile compounds contributing to the sensory notes of sweetness, nutty, roasted, hazelnut, and caramel-like flavors in coffee. The honey/pulped natural robusta coffee technology emerges as a frontrunner among emerging coffee processing techniques. Its complexity, elucidation of microbial metabolism, and the impartation of enhanced sensory properties position it as a potential in the food industry. Farmers and the coffee industry could benefit from these findings, opening doors for

further reforms in processes and potential advancements in industrial applications. Overall, present study opens a new era in coffee processing, offering a tantalizing glimpse into the possibilities of pulped natural coffee. The integration of innovative techniques, the identification of unique markers, the enhancement of sensory experiences with the conservation of water paves the way for a brighter, more flavourful coffee.

(Source: Aswathi K.N., Shirke A., Praveen A., Chaudhari S.R., Murthy P.S. (2023). *Pulped natural/honey robusta coffee fermentation metabolites, physico-chemical and sensory profiles*, Food Chemistry, 429, art. no. 136897.)

## New Technologies

### Cleaner Process for Biotechnological Production of Spirulina

The design and development of an automation system for cleaner microalgae cultivation (Spirulina) has been successfully developed. This innovative system for biotechnological Spirulina production employs an advanced CO<sub>2</sub>-fed pH control strategy. Departing from the conventional sodium bicarbonate method, this cleaner system addresses associated bottlenecks, such

as the high ash content of Spirulina, and also eliminates the use of HCl in the downstream to reduce the ash content. Sensors monitoring pH, DO, temperature, and light intensity, directly connected to a data logger, streamline the laborious manual recording process prevalent in Spirulina cultivation. Key features of the system include CO<sub>2</sub>-based pH control, a gas mixing system with air, and a membrane sparger to tackle mass transfer limitations. Positioned at the culture's bottom, the membrane sparger enhances CO<sub>2</sub> mass transfer, ensuring optimal dissolution and minimizing losses. This comprehensive cleaner process marks a significant advancement in Spirulina biotechnological production.

## Technologies Transferred

- Millet based cookie & Preparation of shelf stable roti from non-wheat cereal and millet (Ragi, Rice, Maize, Jowar, Bajra) (Pankaj Enterprises, U.P)
- Pulse based papads & Pickles and chutneys: preparation, Instant traditional food: Sambhar (Venkateshwar Food Products, Kalaburgi)
- Bottling of Sugarcane Juice (K K Lifesciences, Chennai; Mr.Surjeet Singh, UP)
- Shelf stable Jowar flour (Ananya Food Industry, Kushtagi)
- Decortication of Ragi (Mr. Syed Zainul Abedeen, Shimoga)
- DOLY MIX, Fermented and dehydrated ready mixes for idli/dosa batter (Krishna Foods, Telangana)
- Chocolate rich in healthy polyphenols (Mrs.Suma Honnenahally Ningappa, Bengaluru)
- Preparation of ready to cook multigrain whole mix for drink/porridge (Mr. Ravi Kumar Parashar, Rajasthan)

- Fermented and dehydrated ready mixes for idli/dosa batter (Hindustan Food Products, Guntur)
- RTS Fruit juices and beverages (Green Touch Kaiga Group, Bengaluru)
- Preparation of ready to cook multigrain whole mix for drink/porridge (Mrs. Padmavathi V, Bengaluru)
- Multigrain Nutri cookies (Mamma mills, Nanjangud)
- Tamarind juice concentrate (Mr. Channabasavaraj S Kadapatti, Hungund)
- Tutti fruity (Papaya/ Carrot) (Diamond Dairy, West Bengal)
- Spirulina choco bar and cereal bar (Dr. Varghese Zachariah, Kerala)
- Fortified mango bar (Mr. Venkatesan. K, Vellore)
- Shelf stable chapati (Immaculate Farm India Extractions Pvt.Ltd, Kerala)



## IPR in the Horizon

A Method for Production of Enzyme Mix for Preparation of No-Added Sugar Bread. Sarma M V R K,

## Short Term Training Programmes Scheduled (Jan - Mar 2024)

- Advanced Spectrometric based analysis (GC-MS, LC-MS-MS, FT-IR & NMR) in Food Science (Jan 8-12, 2024)
- Molecular Biology Tools and Techniques (Jan 8-11, 2024)
- Paddy and Rice Processing and its Products (Jan 29-Feb 2, 2024)

Prabhasankar P, Gnanesh Kumar B S, Ashwath Kumar K, Punil Kumar H, Ashok Sadhu, Abel Anbarasan Philip, Teja Sree Hamasavathu. 28-Nov-23, No.202311081141.

- Advanced Techniques in Animal Cell Culture (Jan 29-Feb 2, 2024)
- Chromatographic Techniques (GC, HPLC, UHPLC) and their Analytical Approaches in Food Analysis (Feb 5-9, 2024)
- Extraction and Quality Assurance of Edible Fats and Oils (Feb 19-21, 2024)
- Rodent Management Strategies at Food Storage Premises (Feb 26-Mar 1, 2024)

## Entrepreneurs' Speak

Coastal Voluntary Network (CVN) is a non-profit organization based at Tenali, Guntur, Andhra Pradesh working mainly on women empowerment, skill development & enterprising, livelihood, coastal areas' development, conservation of natural resources etc. for the last 10 years.



### Product ranges & brand

The Covid-19 had posed immense and adverse effects on the livelihood of the rural women especially widows and women-led families! They lost their only known agro-manual work!! In order to cope with the intense need of feeding children and continue their education, they found nothing as they are not skilled to search for any alternative source for income. This chaos and dungeon of misfortune and stoppage of income made the women who are responsible for their family, children, aged people etc. devoid of any hope. The situation impacted the pregnant and lactating women the most. Thus identifying the need, the DSIR, DofST, Govt of India graciously supported this concept under the

resourceful scheme of DSIR, to enhance livelihood and income for these women and girls who are resource poor and Covid-19 hit. Accordingly, the concept envisages at making the women and girls as masters of skill on CSIR-CFTRI developed technologies (14 formulations) of marine and spices, form them into a legal entity and establish a common enterprise in which the women are the workers, marketers, profit sharers and owners. Our objective is to establish an exclusive enterprise with necessary machineries, equipment, tools etc., The direct beneficiaries of the project are 30 women and girls and indirectly 75 women/girls of Angalakuduru village of Tenali, Guntur, Andhra Pradesh.

### Technology Formulations that we bought under the two thematic/Trade Technologies :

Technologies	Formulations / Varieties
Shelf-Stable Curry Pastes	(1) Chicken Curry Paste, (2) Vandaloo and (3) Kitchen King for Vegetarian Preparations.
Instant Gravy Mixes	(1) Multipurpose Gravy Mix, (2) Biryani Mix, (3) Madras Kurma, (4) Mutton Chilli Fry, (5) Fish Curry, (6) Fish Fry Masala, (7) Rohu Masala, (8) Goan Fish Curry, (9) Garlic Kabab, (10) Ginger Kabab and (11) Tandoori Chicken.

### Vision & challenges :

- To set up sustainable women-led technological and scientific enterprises through work force that is skilled and trained in CSIR-CFTRI developed technologies – Rural/Urban women's scientific and technological work force.
- Provide highly potential business opportunity through the technologies of Instant Gravy Mixes (Dehydrated) and Shelf-Stable varieties of Curry Pastes.
- To facilitate women and girls' socio-participatory development and empowerment to have development and equality through enhancement of their income and participation.

### Role of CFTRI in catalyzing growth of your firm and your advice to emerging start-ups

Technology plays a crucial role in the success of any start-ups. From ideation to product development, from

market research to customer acquisition, and from securing funding to creating a company culture, technology is helping start-ups to achieve their goals and build sustainable and thriving businesses. In nutshell, feasible and potential innovative technology is the backbone of start-up. According to our experience with CFTRI Technologies that we adopted, are purely customer-needy and very helpful to customers in their modern and busy life to reduce cooking time. Moreover, they are natural and traditional recipe-oriented. These technologies of Instant curry pastes and gravy mixes help to increase customer satisfaction, loyalty, customer base etc.

Hence, our sincere advice is that customer-needy feasible and potential technologies of CSIR-CFTRI should invariably be selected to have a successful start-up enterprise; as such technology is like “job half-done” towards growth and sustainability of a start-up; and most importantly, to be a magnet for securing funding, which is indispensable and inevitable for any start-up.

## New Collaborations

- **Adikavi Nannaya University, Rajamahendravaram (Oct 16, 2023)**

To have strategic position through collaborations between both the institutions to meet emerging

scientific and technological challenges of the society.

- **Ramaiah University of Applied Sciences, Bengaluru (Dec 10, 2023)**

To mutually co-operate in Research & Development and sharing of resources between the institutions.

## Events

### Gandhi Jayanthi (Oct 2, 2023)

Gandhi Jayanthi celebration was conducted on 2nd October, 2023 at CSIR-CFTRI campus. As part of Swachhata Shramdan, Swachhata Hi Seva campaign with theme “Garbage Free India” event was undertaken by students and staff of CSIR-CFTRI.



### World Food Day (Oct 16, 2023)

World Food Day celebration 2023 with the theme “Water





is Life, water is Food. Leave no one behind” was held on 16<sup>th</sup> October, 2023 wherein Dr. N. G. Malleshi, Chief Scientist(Retd.) & Former Head, GST Department was the Chief guest and delivered the Chief Guest address entitled “Mainstreaming Millets for Food and Nutritional Security”. Dr. Sridevi Annapurna Singh, Director, CSIR-CFTRI presided over the function.

### CSIR Foundation Day (Oct 21, 2023)

82<sup>nd</sup> CSIR Foundation celebration were held on 21<sup>st</sup> October, 2023 wherein Prof. Rishikesha T. Krishnan, Director, Professor in Innovation & Leadership, Indian Institute of Management, Bangalore (IIM-B) was the Chief guest and delivered the Chief Guest address entitled “Can India become Innovation powerhouse”. Dr. Sridevi Annapurna Singh, Director, CSIR-CFTRI presided for the event. The dignitaries distributed prizes to School children who won in the competitions and to Meritorious students. Mementoes were also distributed to retirees and staff.



### CSIR-CFTRI Foundation Day (Oct 21, 2023)

CSIR-CFTRI 74<sup>th</sup> Foundation day celebration was held on 21<sup>st</sup> October, 2023 wherein Prof. M. Pushpavathi, Director, All India Institute of Speech and Hearing (AIISH), Mysore was the Chief guest and delivered the Foundation Day Address entitled “Ahaara and Aarogya in specially abled: A step ahead to POSHAN Programme”. Ms Shilpi Agarwal, Divisional Railway Manager, Mysuru Division, South Western Railway was



Guest of Honour and Dr. Sridevi Annapurna Singh, Director, CSIR-CFTRI presided the event.

### Kannada Rajyotsava (Nov 1, 2023)

Kannada Rajyotsava celebrations was held on Nov 1, 2023. Dr. M.S. Sekhar, Kannada writer and Critic, and former Director of Gandhi Bhavan, University of Mysore was the Chief Guest and he addressed the gathering. On this occasion Director, CSIR-CFTRI and Chief Guest hoisted the Flag.



### Ayurveda Day (Nov 2, 2023)

Ayurveda day programme was held on 2<sup>nd</sup> November, 2023 where in Dr. Tejaswi Kiran and Dr.C.V. Sindhu, CARI, Bengaluru delivered talks on “Ayurveda: A Distinctive approach to metabolic syndrome & Ayurveda: A Panacea for Global Health concerns”, respectively. Also as part of this programme free health check up for staff and students was conducted and free medicines were distributed.



### World Food India (Nov 3-5, 2023)

World Food India 2023 was held from 3-5<sup>th</sup> November, 2023 at Pragathi Maidan, New Delhi which was organized by the Ministry of Food Processing Industry. The event was inaugurated by the Prime Minister Shri Narendra Modi on 3<sup>rd</sup> November. Council of Scientific and Industrial Research (CSIR) Pavilion at World Food

India 2023 Expo was inaugurated by Dr. N. Kalaiselvi, Director General, CSIR & Secretary, DSIR, New Delhi on 3rd November 2023 in presence of Directors of three CSIR Constituent Laboratories, namely, Dr. Sridevi Annapurna Singh, Director, CSIR-CFTRI, Mysuru; Dr. Sudesh Kumar Yadav, Director, CSIR-IHBT, Palampur (HP); and Dr. C. Anandharamakrishnan, Director, CSIR-NIIST, Thiruvananthapuram (Kerala) and Scientists from CSIR Hqrs. The design and setting up of CSIR-Pavilion was coordinated by CSIR-CFTRI. During the event, Dr. Kalaiselvi released three products one each from 3 labs. The product launched from CSIR-CFTRI Technology was "Ragi Power Punch" (Instant Beverage Mix from Malted Ragi) of M/s Ram Gold. Director General visited CSIR Pavilion and interacted with Directors and Scientific staff. CSIR-CFTRI displayed Food Machinery, millet and other products and Innovative Technologies developed by CSIR-CFTRI. Officials from Central and State Govts Ministries and Boards, Industrialists, Entrepreneurs, Exhibitors, Academia and Research persons from Institutes and universities visited the CFTRI stall in CSIR-Pavilion on all 3 days and interacted with Director and Scientific staff.



### 'Aarambh' Roadshow (Nov 20, 2023)

CSIR-CFTRI organized "Aarambh" a roadshow event to connect startups, Scientists, Students, and Investors on 20<sup>th</sup> November 2023. The roadshow was held at CSIR-CFTRI as ecosystem partner to Biotechnology Industry Research Assistance Council (BIRAC) and Global Bio India (GBI 2023). The event was inaugurated by Shri. Sudhanva Dhananjaya, Founder and CEO of Excelsoft Technologies, Mysuru in presence of Dr. Debanjana Dey, Sr Program manager, Biotechnology Industry Research Assistance Council (BIRAC), New Delhi. Dr. Sridevi Annapurna Singh, Director, CSIR-CFTRI presided over the inaugural function. The dignitaries also launched the new website of the upcoming BioNEST (Bioincubators Nurturing Entrepreneurship for Scaling Technologies) bio incubation facility at the

institute with the support of BIRAC.



### ISMT Course Award Ceremony (November 21, 2023)

The award ceremony and valedictory function of 42<sup>st</sup> ISMT course was held on 21st November, 2023. Dr. K. Leelavathi, Former Senior Principal Scientist, CSIR-CFTRI, the chief guest of the function addressed the students and participants. The occasion was presided over by Dr. Umesh Hebbar H, Chief Scientist and medals were presented to meritorious students.



### Constitution Day (Nov 26, 2023)

Constitution Day was celebrated on 26<sup>th</sup> November, 2023 at CSIR-CFTRI campus. Dr. M. Umapathi, Former Chairman, Dept. of Political Science, University of Mysore was the Chief Guest and delivered the special address on "Indian Constitution: and its relevance to society". Dr. N. K. Rastogi, In-Charge Director and Chief





Scientist, presided over the function. The participants read the Preamble of the Constitution on this occasion.

### Jan Jatiya Gaurav Divas (Nov 23, 2023)

Jan Jatiya Gaurav Divas 2023 was celebrated on 23<sup>rd</sup> November 2023 at CSIR-CFTRI. As part of celebration, the dignitaries inaugurated the programme by lighting the lamp, paid Homage and offered floral tributes to Bhagawan Birsa Munda. The Invited talk was delivered by Dr. N. Muni Raju, Director and Planning Coordinator, Tribal Development Commission, Govt. of Karnataka, Mysuru. Mr. Mutta Somanna, renowned social worker and Rajyothsava awardee was felicitated during the function. Dr. Sridevi Annapurna Singh, Director, CSIR-CFTRI presided over the function. In continuation of this celebration, a Workshop on “Opportunities in Food Processing for Tribal Empowerment” was conducted for the tribal women on 24<sup>th</sup> November, 2023. Dr. Ravi U. M, Researcher and Resource person, Janapada Loka, Ramanagar inaugurated the workshop with floral tribute to Bhagwan Birsa Munda and delivered a talk on “Lifestyle and food habits of tribals in Karnataka”.



On culmination of Janjatiya Gaurav Divas celebrations, Prof. Promode Kumar Misra, Leading Social Anthropologist and Former National Fellow, Indian Council of Social Science Research delivered a talk on 29<sup>th</sup> November, 2023 on the topic “Tribes in India “with emphasis on bio cultural aspects of Scheduled Tribes in all parts of the country having a well-defined society, culture, identity and rules of behaviour.



In continuation of celebrations, workshop on “Opportunities in Food Processing for Tribal Empowerment” was conducted for the tribal women on 24<sup>th</sup> November, 2023. Dr. Ravi U. M, Researcher and Resource person, Janapada Loka, Ramanagar inaugurated the workshop with floral tribute to Bhagwan Birsa Munda and delivered a talk on lifestyle and food habits of tribals in Karnataka. Workshop continued with hands on demonstration on Pickle making by Mrs.M.R. Vijayalakshmi, Fruits and Vegetable Technology Department, Papad making by Dr. Usha Dharmaraj, Grain Science and Technology Department and Ginger candy making by Dr. Shivakumar, Plantation Products Spices and Flavour Technology Department using various pilot plant equipments. Dr. Jyothilakshmi presented a talk on nutritional aspects of food and explained importance of value addition of food for tribal women empowerment. 13 tribal women from the different tribal areas of Mysuru district participated in the programme. Participation certificates were distributed in the concluding session.



### Shradhanjali to Dr. B. R. Ambedkar (December 6, 2023)

Shradhanjali to Bharath Ratna Dr. B. R. Ambedkar was observed on 6<sup>th</sup> December, 2023 at CSIR-CFTRI. Floral tributes were offered on this occasion by Director, CSIR-CFTRI & staff of the Institute.



### Millet Showcase Inauguration (Dec 7, 2023)

CSIR -CFTRI Millet Showcase was inaugurated on 7<sup>th</sup> December 2023 by Shri S. Somanath, Chairman, Space Commission & Secretary, DoS, ISRO, Bengaluru and addressed students and staff of CSIR-CFTRI on this occasion.



### 9<sup>th</sup> IFCoN (Dec 7-10, 2023)

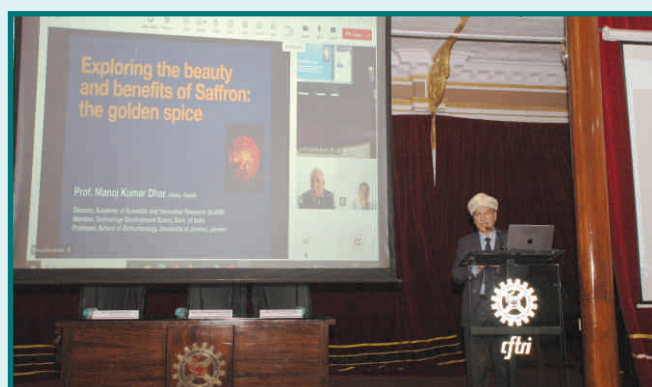
The 9<sup>th</sup> edition of the International Food Convention (IFCoN), organized by the Association of Food Scientists & Technologists (India) was held at CSIR – Central Food Technological Research Institute, Mysore, from December 7<sup>th</sup> to 10<sup>th</sup>, 2023. This event was co-organized by CSIR-CFTRI, DRDO-DFRL, and CSIR-IITR. The conference was centered around the theme "TRIMSAFE – Technology Re-engineering for Innovation and Mitigating Risk for a Safe, Sustainable, Affordable & Secure Food Eco-system." This emphasized the pivotal role of technological advancements in safeguarding the safety, sustainability, affordability, and security of the food ecosystem worldwide. The inaugural event had the presence of esteemed luminaries like Dr. N Kalaiselvi, Secretary of DSIR (Department of Scientific and Industrial Research) and Director General of CSIR. Shri. S Somanath, Chairman of the Indian Space Research Organisation (ISRO), Secretary, DoS; Her Highness Smt. Pramoda Devi Wadiyar; Dr. N Bhaskar, President of AFST(I) and Organizing Chairman of the 9<sup>th</sup> IFCoN; Dr. Anil Dutt Semwal, Director, DFRL, Mysuru; Dr. Sridevi Annapurna Singh, Director of CSIR-CFTRI, Mysuru. As prelude to "Prof. M. S. Swaminathan Padma Shri Award Lecture" Series: Convention Talk on "Sci-toons" was delivered by Dr. Pradeep Kumar Srivastava, former Deputy Director (Senior Principal Scientist) at CSIR-CDRI, Lucknow. The "Prof. M. S. Swaminathan Padma Shri Award Lecture" series started with talk of Prof. (Dr.) Shanshank R. Joshi, Consultant Endocrinologist at Lilavati Hospitals & Joshi Clinic, a Padma Shree. The conference garnered an enthusiastic response with

2600 registered delegates, hosted around 24 technical sessions spanning over our days, covering 90 distinguished speakers who are globally and nationally renowned in the fields of research, academia & industry. The poster sessions in IFCoN-2023 received overwhelming response especially from the young researchers from different parts of the country. A standout feature of the convention, the Mega Food Expo, had participation from more than 75 industry/research organisations. One noteworthy highlight was the dedicated Millet Pavilion, featuring an exclusive section for showcasing millet technologies and products. The conference's comprehensive agenda extended to include the Start-Up Conclave which was exclusively designed to nurture food startups, fostering an environment of collaboration and innovation. In the Valedictory Session, the distinguished Chief Guest, Prof. S. Ayyappan, a Padma Shri Awardee and Chairman of NABL, Gurugram, delivered an enlightening address. Poster presentation awards were distributed on this occasion.



### Indian Botanical Society Foundation Day Lecture (Dec 28, 2023)

Indian Botanical Society Foundation day lecture 2023 event was held on 28<sup>th</sup> December, 2023, wherein Prof. Manoj Kumar Dhar, Director, AcSIR, Ghaziabad, UP delivered a talk on "Exploring the beauty and benefits of Saffron: The Golden Spice"





## Visitors

- Indian Army, Navy and Air Force personnel who were participants of Officer Catering Course conducted by ASC, Bengaluru visited CSIR-CFTRI and its facilities on 30th November 2023.



## Technical and Invited Talks

- Prof. George D. Rose, John Hopkins University, USA delivered invited talk entitled “Thinking About (Thinking About Science)” on 13<sup>th</sup> November, 2023 in the institute.
- Mrs. Nirmala Shahapurkar, Technical Manager for Foods, Nestle delivered technical talk on 18<sup>th</sup> December, 2023.



## Selected Publications

- Biswas A., Hazra S.K., Chaudhari S.R., Detection of barley malt syrup as an adulterant in honey by <sup>1</sup>H NMR profile, *Food Chem.*, 2023, 429, art. no. 136842. (IF: 8.8)
- Haritha D., Sachindra N.M., Bettadaiah B.K., Optimization of ultrasonic-assisted extraction of flavor compounds from shrimp by-products and characterization of flavor profile of the extract, *Ultrason. Sonochem.*, 2023, 101, art. no. 106651. (IF: 8.4)
- Tripathi S., Pushpa S. Murthy., Coffee oligosaccharides and their role in health and wellness, *Food Res. Int.*, 2023, 173, art. no. 113288. (IF: 8.1)
- Shinde S.P., Chaudhari S.R., Matche R.S., A way forward for a sustainable active packaging solution for prolonging the freshness and shelf life of *Rosa hybrida L. cut flowers*, *Postharvest Biol Tec.*, 2023, 204, art. No. 112475. (IF: 7)



Group Photo of CSIR-CFTRI staff & students in august presence of Shri S Somanath,  
Chairman ISRO & Secretary, DoS on Dec 7, 2023

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