FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA

Inspiring Trust, Assuring Safe & Nutritious Food

Ministry of Health and Family Welfare, Government of India

Report on FSSAI's participation in107th Indian Science Congress (ISC)- Pride of India Expo

3rd-7th January, 2020

Gandhi Krishi Vigyan Kendra (GKVK) Campus
University of Agricultural Sciences, Bengaluru

1.0 Introduction:

Food Safety and Standards Authority of India (FSSAI) participated in 107th Indian Science Congress (ISC) - Pride of India Expo held from 3rd -7th January, 2020 at GKVK Campus, University of Agriculture Sciences Bengaluru. About 15,000 delegates, including 2 Nobel Laureates and eminent scientists from across India and abroad attended the Science Congress. 'Pride of India Expo', a science exhibition, was the key attraction during the Science Congress. The five days exhibition witnessed a large number of visitors from the corporate sector, scientific fraternity, academia, R&D institutes, defence, central & state government departments, PSUs, boards, autonomous bodies etc.

FSSAI stall highlighted the recently launched initiative called Network for Scientific Cooperation for Food Safety and Applied Nutrition (NetSCoFAN), a network of research and academic institutions working in the area of food and nutrition which is comprised of eight groups of institutions working in different areas. FSSAI also highlighted the initiatives under Eat Right India and other initiatives for public awareness, consumer education, and publicity of FSSAI's initiatives and to develop strong engagements with various stakeholders. Food Safety Department Karnataka deputed the Officials at the FSSAI stall and addressed the clarification and queries of the visitors. Members of NetSCOFAN network made demonstrations of rapid testing kit for detecting adulterations such as formaldehyde and ammonia in fresh fish. Explanations on the rapid testing method were made to many delegates of Indian science congress and public during the five day expo period in the FSSAI stall.

2.0 Inauguration 107th Indian Science Congress (ISC)- Pride of India Expo

The 107th Indian Science Congress (ISC) was inaugurated by Prime Minister Narendra Modi on January 3, 2020 at the University of Agricultural Sciences in Bengaluru. While delivering the inaugural address, the Prime Minister said that India's growth story depends on its achievements in the Science and Technology sector and reiterated the need to revolutionize the landscape of Indian Science Technology and Innovation.

PM Modi gave the motto of "Innovate, Patent, Produce and Prosper" to the young scientists in the country, saying that these four steps will lead India towards faster development. He stated that "innovation for the people and by the people is the direction of New India."

PM Modi also launched the Indian Science Technology and Engineering facilities Map (I-STEM) Portal. The portal has been designed to be the gateway for researchers to locate a specific type of facility they require to conduct their research and development work in India.

3.0 Theme: The focal theme of the congress was ***"Science and Technology: Rural Development",*** ostensibly to bridge the gap between urban and rural India and improving the quality of farmers life through science and technology.

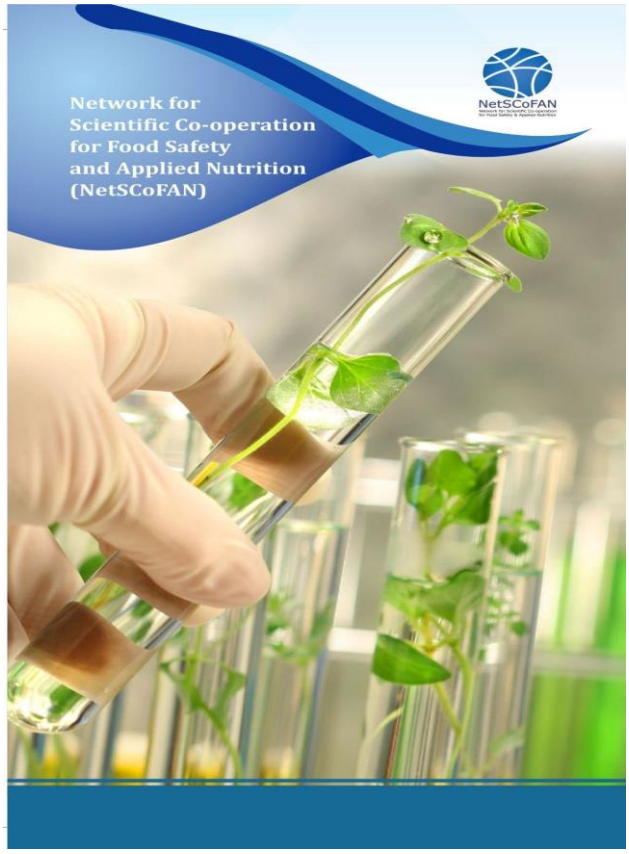
4.0 FSSAI Participation: The main aim of the FSSAI's participation was to develop Scientific Cooperation under NetSCoFAN with premier research and academic institutions from India, who are currently working in the field of food science, nutrition and technology, will be involved in R & D activities for generating technological innovations and know-how to solve day to day food safety challenges and concerns. NetSCoFAN members from the lead institutions, from the eight groups viz (1) Biological Group(BIG); (2) Chemical Group(CHG); (3) Nutrition and Claims Group(NLG); (4) Foods of Animal Origin Group(FAG); (5) Food of Plant Origin Group(FPG); (6) Water and Beverages Group(WBG); (7) Food Testing Group(FTG); and (8) Safer and Sustainable Packaging Group(SPG) participated and were deputed at the stall to showcase the information as mentioned at Para 6 to the visitors. Further FSSAI initiatives under Eat Right India were also displayed. **FSSAI stall was awarded as Best Design Stall at the Pride of India Expo.**

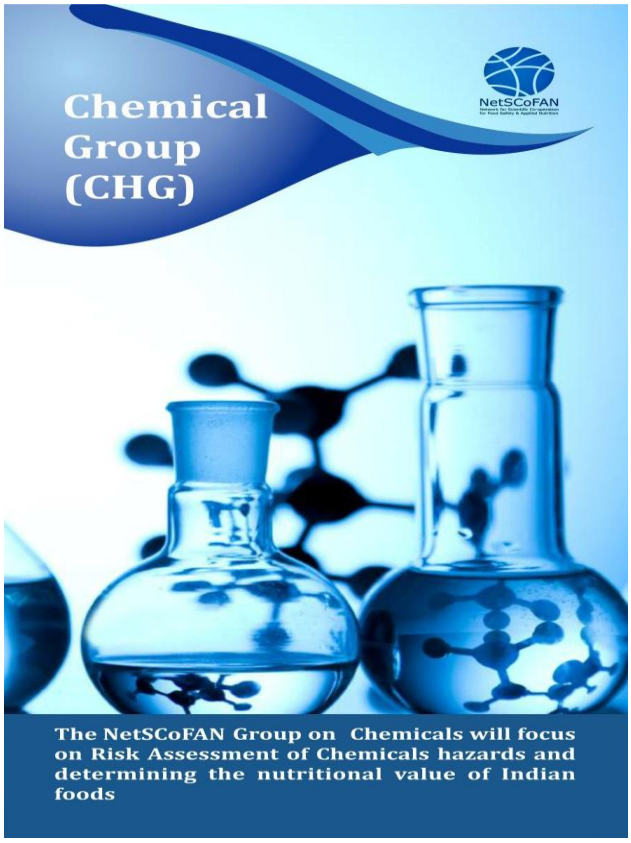
4.1 Stall description:

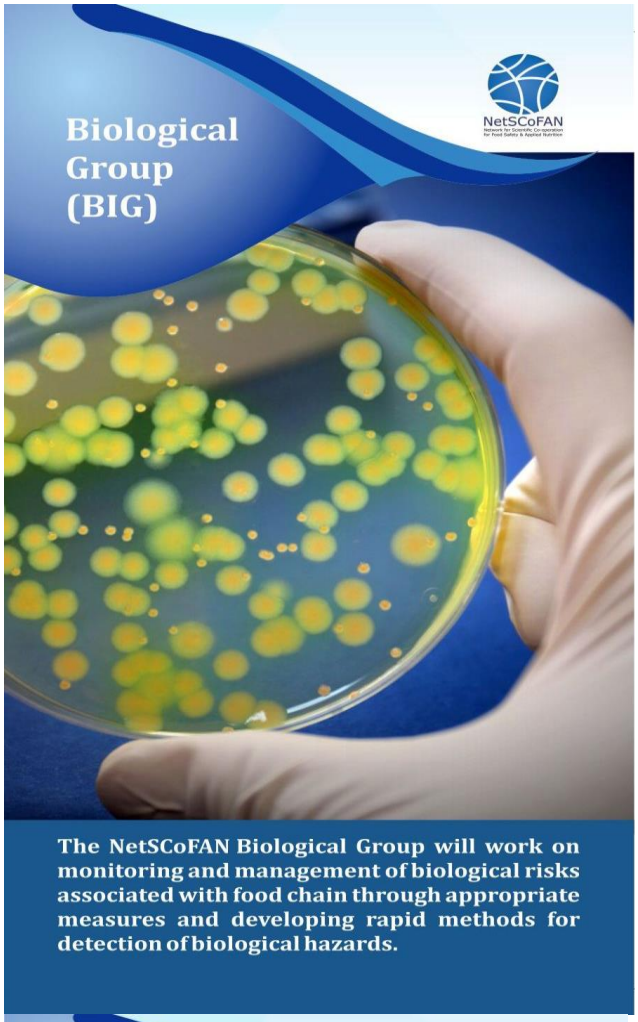
- FSSAI had acquired the booth space of **45 sqm** to conduct promotional or informative activity with respect to FSSAI initiatives. The Officials from State Food Safety Department Karnataka and NetSCOFAN members engaged the visitors by giving them information related to various FSSAI initiatives such as NeTSCoFAN, FoSTaC and Eat Right India.
- The stall had backlit display panels exhibited the clear features in a simplified manners. Two 42'' LED screen was installed in the stall wherein movies of NetSCoFAN, Eat Right India were played.
- A 42 inch touch screen audio-video facility connected with internet was also installed. The AV is a digital walkthrough for FBOs as well as visitors interested in starting food business, to provide an interactive, easy to understand demonstration of working of FSSAI on online platform.

FSSAI Stall

4.2 The Key Panels highlighted: The following backlit panels were displayed in the stall keeping in mind the visitor and exhibitor profile of the fair:-






Biological
Group
(BIG)
NetSCoFAN
The NetSCoFAN Biological Group will work on monitoring and management of biological risks associated with food chain through appropriate measures and developing rapid methods for detection of biological hazards.


Biological
Group
(BIG)
NetSCoFAN
The NetSCoFAN Biological Group have 11 interdisciplinary network partners, that will work on monitoring and management of biological risks associated with food chain through appropriate measures and developing rapid methods for detection of biological hazards.
FSSAI Associate Scientific Panels:
• Biohazards
• GM Foods
• Expert Committee on Organic Foods
KEY CHALLENGES IN CURRENT SCENARIO
There is a need for:
• Monitoring microbial load, foodborne pathogens and other biological hazards across the food supply chain
• Development and validation of non-culture methods for rapid multiplex detection of foodborne pathogens quantification of microbial load
• Development and validation of rapid methods for microbial toxins
• Development of affordable on-site detection methods for foodborne pathogens and their toxins
• Development of methods to detect genetically modified (GM) foods and their safety studies
• Monitoring of antimicrobial resistant microorganisms in foods and investigating their role in dissemination of AMR
• Creating awareness among stakeholders for producing safe and wholesome food products
GC-MS
LC-MS
BSLIII Facility
Real time PCR
MAJOR ACHIEVEMENTS
• ICAR-IVRI and ICAR-CIFT have developed technologies for rapid detection of foodborne pathogens and their toxins.
• CSIR-IITR has developed technologies for the detection of adulterants such as butter yellow and Argemone alkaloids in edible oil.
• Natural ingredients are being researched at ICAR-IVRI, ICAR-CARI, ICAR-CIFT for controlling microbial load in meat, poultry and fish products, respectively.
• CSIR-CIMAP and ICMR-NIN has developed various Nutraceutical formulations under Nutraceutical mission project.
• ICAR-IIHR has developed strategies to enhance productivity and utilization of tropical and sub-tropical horticulture crops including fruits, vegetables, ornamentals, medicinal and aromatic plants and mushrooms.
• BARC has standardized process for irradiation of agricultural produce, fish, meat and meat products and evaluated microbial and chemical safety, nutritional adequacy and wholesomeness of irradiated food.
• ICMR-NICED has contributed significantly in the foodborne outbreak investigations and epidemiological surveillance of foodborne pathogens in different parts of the country.
• DBT-THSTI and BITS-Pilani have developed rapid detection methods for foodborne pathogens.
• CSIR-NBRI has contributed in the standardization of herbal drugs formulations.
FUTURE ROADMAP
• Monitoring and verification across the supply chain to ensure the systems are working.
• Development and adoption of new technologies addressing emerging food safety risks involving all stakeholders in the value chain.
• Management of biological risks associated with food by controlling them through appropriate measures.
• Conducting research for suggesting new biological parameters or standards for various food commodities to the Scientific Panels.
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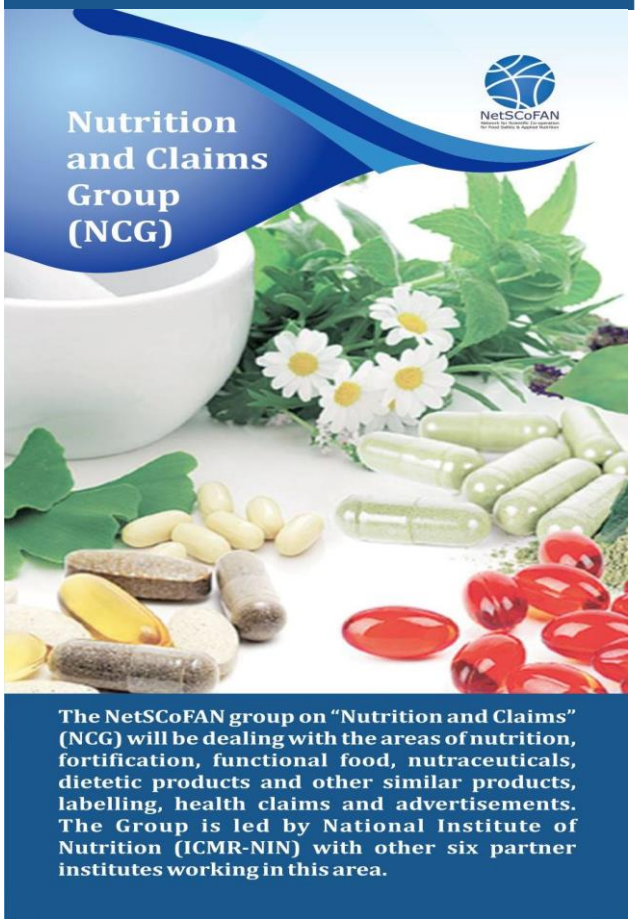
Nutrition
and Claims
Group
(NCG)
NetSCoFAN
The NetSCoFAN group on "Nutrition and Claims" (NCG) will be dealing with the areas of nutrition, fortification, functional food, nutraceuticals, dietetic products and other similar products, labelling, health claims and advertisements. The Group is led by National Institute of Nutrition (ICMR-NIN) with other six partner institutes working in this area.


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FSSAI Associated Scientific Panels
• Nutrition and Fortification;
• Labelling and claims/ advertisements; and
• Functional foods, Nutraceuticals, Dietetic products and other similar products
KEY CHALLENGES IN CURRENT SCENARIO
• Generation of data/information on Total diet survey, dietary habits of the population.
• Development of quality standards for plant/botanicals.
• Need to develop evidence based information on claims for nutritional and health products.
• Documentation of data with reference to pre-clinical, clinical and post marketing of nutraceuticals and health supplements.
• Addressing the issues related to HFSS foods and front-of-pack labelling, nutrient profiling.
Atomic Absorption Spectrophotometer
LCMS-MS
Gas Chromatography
MAJOR ACHIEVEMENTS
• ICMR-NIN's work has resulted in several national supplementary feeding programmes such as ICDS and Mid-day Meal, etc.
• NIN also formulates the recommended dietary allowances used by regulatory authorities like FSSAI. Nutrition biology research in the Institute has resulted in the implementation of food fortification such as iodized salt, double fortified salt, assessment of the nutrients and bioactive substances in a wide variety of foods, nutrient cancer interactions, food safety, drug toxicology etc.
• CIMAP has Repository of >375 Phytochemical reference compounds and >450 Phytochemical characterized from 85 Medicinal and Aromatic Plants
• CSIR-NBRI developed a unique herbal nutritional supplement for growing kids and aged personals which has been adopted under malnutrition programme for its free distribution in identified malnutrition affected villages.
• BARC has facility for gamma radiation processing facilities and involved in standardisation and development of protocols for radiation processing of food and other agri products.
FUTURE ROADMAP
• To provide a platform to address the latest challenges in Food and Nutrition.
• Mechanism for validation of functional food including nutraceuticals/health supplements, probiotics and prebiotics regarding its safety and efficacy using modern biomarkers and current regulatory guidelines.
• Tackling nutritional related disorders by identifying causes in the present day context, and formulating strategies to control the rise in metabolic disorders.
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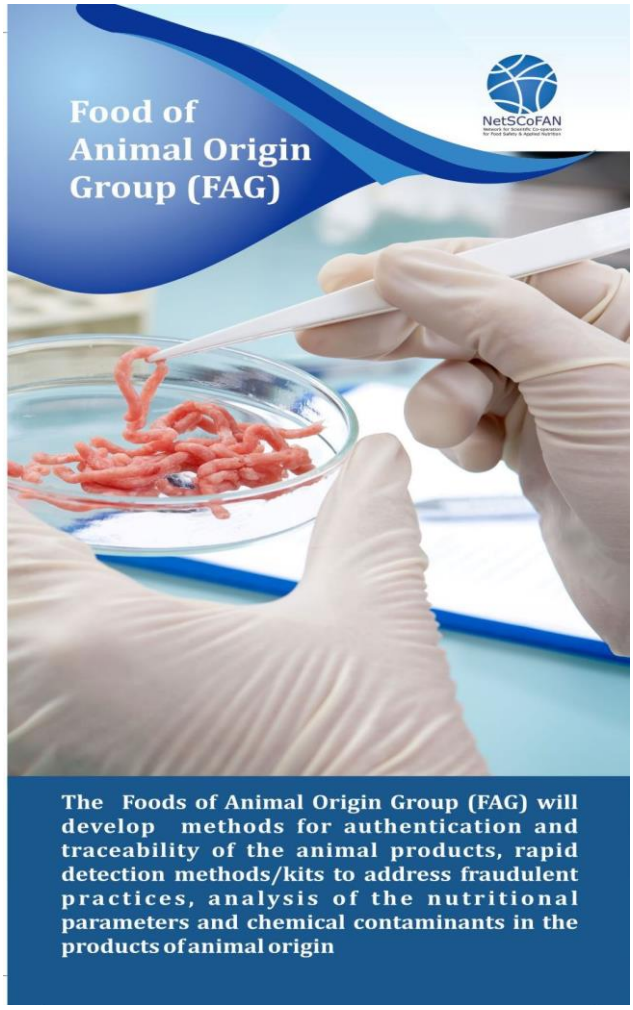
Food of
Animal Origin
Group (FAG)
NetSCoFAN
The Foods of Animal Origin Group (FAG) will develop methods for authentication and traceability of the animal products, rapid detection methods/kits to address fraudulent practices, analysis of the nutritional parameters and chemical contaminants in the products of animal origin


Food of
Animal Origin
Group (FAG)
NetSCoFAN
The NetSCoFAN Foods of Animal Origin Group (FAG) will have 1 Nodal institute and 11 interdisciplinary network partners.
Work Focus will be on:
• Development of methods for authentication and traceability of the animal products
• Development of rapid detection methods/kits to address fraudulent practices (adulteration, substitution etc)
• Analysis of the nutritional parameters and chemical contaminants in the products of animal origin
FSSAI Associated Scientific Panels:
• Scientific Panel on Meat and Meat Products including Poultry.
• Scientific Panel for Fish and Fisheries Products.
• Scientific Panel on Milk and Milk Products.
KEY CHALLENGES IN CURRENT SCENARIO
There is a need for:
• Development of efficient methods/techniques for species identification.
• Establishment farm-to-fork traceability system in the food value chain.
• Development of methods/kits for rapid detection of adulterants.
• Training and awareness regarding food laws related to quality and safety of foods of animal origin to tackle the unhygienic practices which leads to food borne infections/intoxications.
Farm-to-fork meat traceability system NRCM
Hygienic slaughter and dressing of food animals NRCM
Organic sheep NRCM
Carcass utilisation plant & Hide and skin section IVRI
MAJOR ACHIEVEMENTS
• NABL Accredited Laboratories at NRCM, NDRI, CIFT, VIMTA, TRILOGY, CALF
• Technologies for authentication of meat and meat products (NABL accredited) at NRCM
• Organic certification for sheep and fodder (NRCM)
• Repository of Listeria cultures (NRCM)
• Development of technologies for value addition to meat and milk (NRCM, NDRI, IVRI)
• New strip based tests for detection of urea in milk (NDRI)
• Major technologies of for healthy shrimp production (CIBA)
• Detection of L. monocytogenes in milk, fish and meat (NRCM, NDRI, CIFT)
• EIC approved analytical facilities for milk & milk products, fruits & vegetables, nutraceutical& functional foods, water, other food products and animal feed (NDDB-CALF VIMTA)
FUTURE ROADMAP
• Rapid testing kit for detection of formaldehyde and ammonia in fish
• Freshness Indicator for refrigerated and packaged fishery products
• Food fraud determination by spectrometry and chemometrics
• Strip based assay for detection of Enterohaemorrhagic Escherichia coli and antibiotics in milk
• PCR Kits for detection of pathogenic bacteria in food
• Kits for detecting artificial colour and argemone oil in edible oils
• Rapid testing for glyphosate in fruits, vegetables and water
• Hand-held device for detection of CO2 evolved from bacteria
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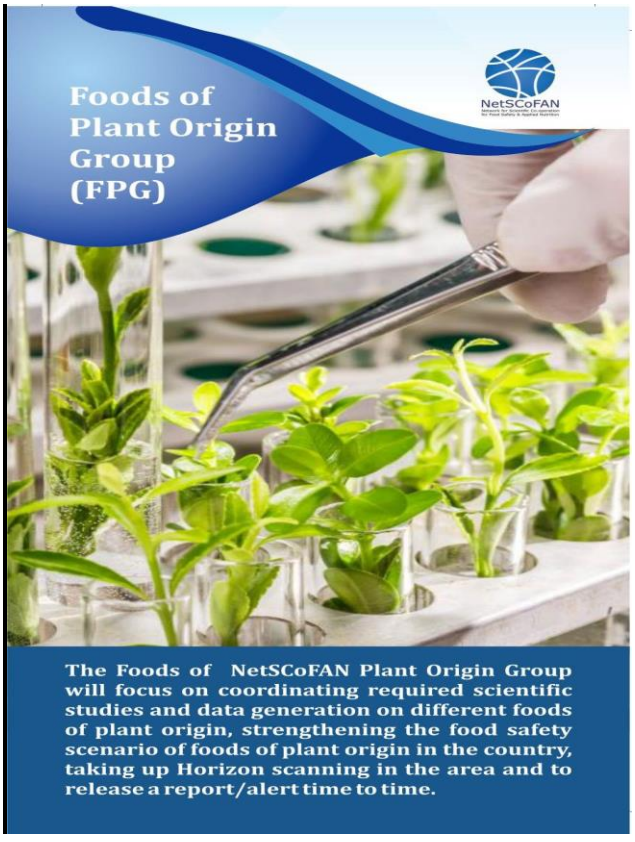
Foods of
Plant Origin
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(FPG)
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The Foods of NetSCoFAN Plant Origin Group will focus on coordinating required scientific studies and data generation on different foods of plant origin, strengthening the food safety scenario of foods of plant origin in the country, taking up Horizon scanning in the area and to release a report/alert time to time.


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FSSAI Associated Scientific Panels:
• Cereal, Pulses, Legumes and their products, including bakery
• Fruits and Vegetable and their products, including dried fruits and nuts
• Oils and Fats
• Spices and Culinary herbs
• Sweets, Confectionery, Sweeteners, sugar and honey
KEY CHALLENGES IN CURRENT SCENARIO
There is a need for:
• Data Generation on important Nutrient inhibitors, anti-nutrient factors and Naturally Occurring Toxic Substances (NOTS), and pesticides residues in widely consumed foods of plant origin with Long-term Risk Analysis.
• Developing and validation of critical methods for issues like fruit content in beverage, milk fat in imitation chocolates, quantification of oils in blended oil, different flours in multi grain atta etc.
• Studies on types and prevalence of new emerging adulterants in spices and herbs.
• Development of field worthy reliable gadgets for on-site detection of quality and safety threats.
• Growth Hormones and Artificial Ripening in fresh fruits and vegetables.
• Level claim validation and characterization of aroma compound present in honey and beverages.
Liquid Chromatography Inductively Coupled Plasma Mass Spectrometry (LC ICP-MS)
Scanning Electron microscope (SEM)
RAMAN Facility
HPTLC-system
MAJOR ACHIEVEMENTS
• Handled All India Coordinated Project on Pesticide Residue.
• National Referral Laboratory, Library of aroma chemical from aromatic plants and Reference Plant Material repository.
• Developed Machine Vision and Quick Testing Kits/Sensors.
• Food Safety Analytics, Food Product Standards and Surveillance, Novel processing methods / Product development.
• Grain storage protocols and instrumentation for detection of safety threats.
FUTURE ROADMAP
• Food of Plant Origin group of NetSCoFAN would like work to address the latest challenges in of Food Safety and Nutrition pertaining to plant foods by extending partnership with universities and scientific institutions.
• Creating a pool of experts across the globe to contributes for the objectives of the group.
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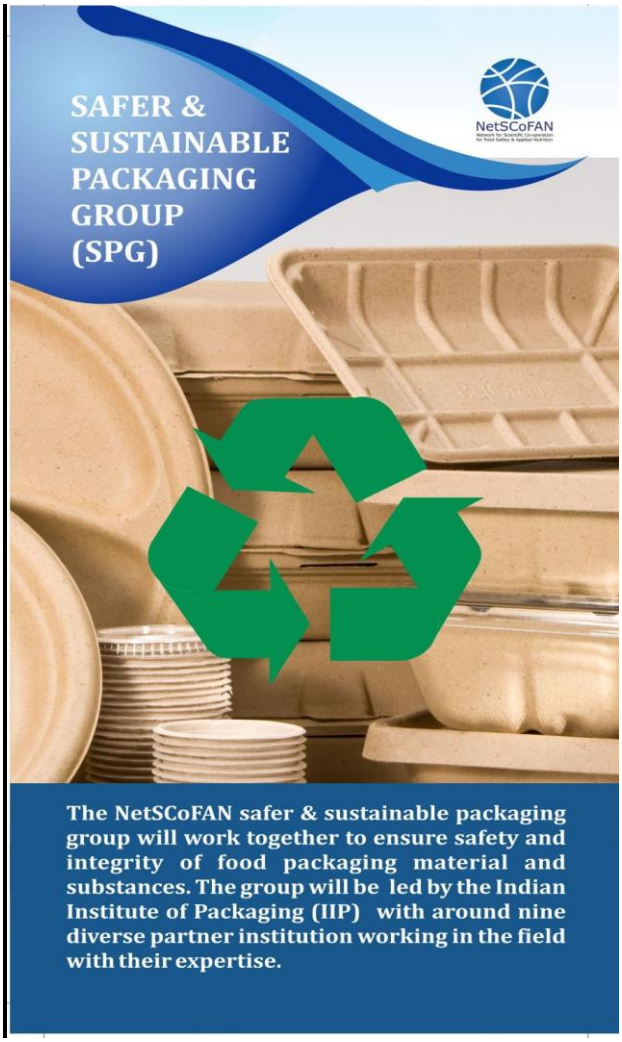
Section 16(3)(e) of the Food Safety and Standards Act, 2006 provides for establishment of network of organizations for

- Scientific co-operation
- Exchange of information
- Development and implementation of joint projects
- Exchange of expertise and best practices in the area of the responsibility of the Food Authority.

Eight groups of institutions working in different areas-

(1) Biological Group (BIG)
(2) Chemical Group (CHG)
(3) Nutrition and Claims Group (NCG)
(4) Foods of Animal Origin Group(FAG);
(5) Food of Plant Origin Group (FPG)
(6) Water and Beverages Group (WBG)
(7) Food Testing Group (FTG)
(8) Safer and Sustainable Packaging Group (SPG).

Each group will be led by a lead institution and selected partner institutions. Each group is mapped to the concerned scientific panel of FSSAI.


SAFER &
SUSTAINABLE
PACKAGING
GROUP
(SPG)
NetSCoFAN
The NetSCoFAN safer & sustainable packaging group will work together to ensure safety and integrity of food packaging material and substances. The group will be led by the Indian Institute of Packaging (IIP) with around nine diverse partner institution working in the field with their expertise.


SAFER &
SUSTAINABLE
PACKAGING
GROUP (SPG)
NetSCoFAN
Safe packaging and packaging materials is a critical part for ensuring the integrity and safety of the food supply chain. Wide variety of materials such as glass, plastic, metal and paper have their own inherent risks. The NetSCoFAN safer & sustainable packaging group will work together to ensure safety and integrity of food packaging material and substances. The group will be led by the Indian Institute of Packaging (IIP) with around nine diverse partner institution working in the field with their expertise.
KEY CHALLENGES IN CURRENT SCENARIO
• Defining substances that migrate from food packaging
• Analytical approaches for identifying substances that migrate from food packaging
• Advances in the generation of new packaging materials
• Food packaging sustainability and recycling; Use of recycled materials for food packaging.
ICP-OES
WVTR and OTR
EDXRF Spectrometer
Differential Scanning Calorimeter
MAJOR ACHIEVEMENTS
• The Laboratory of IIP Mumbai is accredited by the NABL for 155 tests covering testing parameters for various packaging materials and is recognised by Bureau of Indian Standards for 26 product standards.
• The institute has patented 17 packaging designs.
• CSIR-ITR is involved in suitability evaluation of Plastic & Polymeric products since more than three decades and has NABL accredited test facilities.
• DFRL has developed a polyolefin based, environmentally degradable packaging materials by incorporating photodegradable additives and have also developed packaging systems for different types of foods such as dehydrated, freeze dried, vacuum dried, shelf stable high moisture foods etc.
• IT Kharagpur has developed a multi-chambered mobile CA/MA storage unit for reducing the post-harvest losses of agricultural produce and boost value addition.
• IIT Guwahati - CoE-SusPol functions towards development of biodegradable polymer based food packaging, its processing, migration and toxicological effects of such packages in relation with food and development of biodegradable plastic resins from both renewable and fossil based feedstock.
FUTURE ROADMAP
• Improvement in packaging design by focusing to improve the design for recyclability, increase the use of recycled materials and to explore the use of alternative materials;
• Actively support collection, sorting and recycling;
• To play an active role in supporting the development of well-functioning collection, sorting and recycling systems; and
• Improving waste management infrastructure and developing a range of end-of-life solutions.
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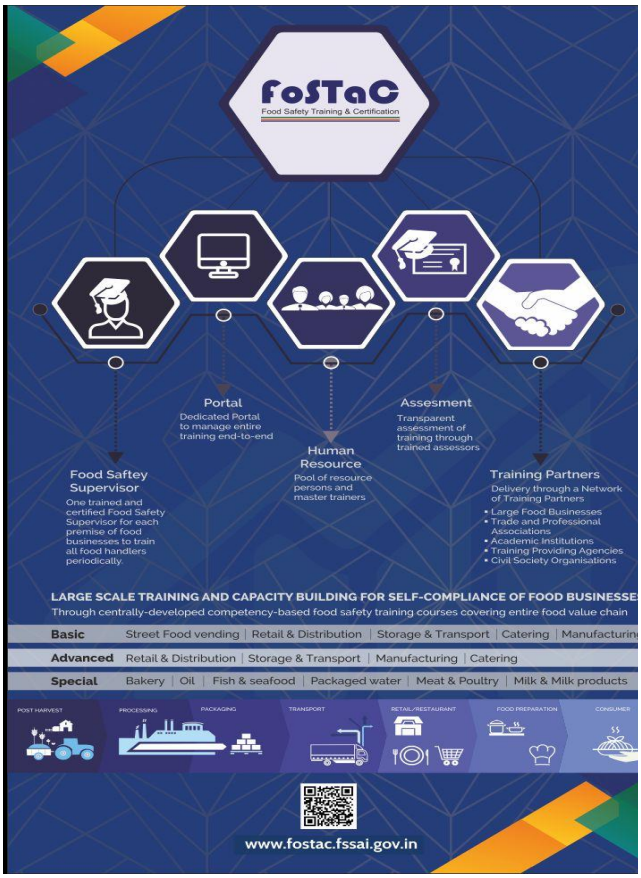
FoSTaC
Food Safety Training & Certification
Portal
Dedicated Portal to manage entire training end-to-end
Assesment
Transparent assesment of training through trained assessors
Human Resource
Pool of resource persons and master trainers
Food Saftey Supervisor
One trained and certified Food Safety Supervisor for each premise of food businesses to train all food handlers periodically.
Training Partners
Delivery through a Network of Training Partners
• Large Food Businesses
• Trade and Professional Associations
• Academic Institutions
• Training Providing Agencies
• Civil Society Organisations
LARGE SCALE TRAINING AND CAPACITY BUILDING FOR SELF-COMPLIANCE OF FOOD BUSINESSES
Through centrally-developed competency-based food safety training courses covering entire food value chain
Basic Street Food vending | Retail & Distribution | Storage & Transport | Catering | Manufacturin
Advanced Retail & Distribution | Storage & Transport | Manufacturing | Catering
Special Bakery | Oil | Fish & seafood | Packaged water | Meat & Poultry | Milk & Milk products
POST HARVEST
PROCESSING
PACKAGING
TRANSPORT
RETAIL/RESTAURANT
FOOD PREPARATION
CONSUMER
www.fostac.fssai.gov.in


Eat Right
India
सही भोजन. बेहतर जीवन.


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4.3 Distribution Material:

The following leaflets/pamphlets/booklets were distributed to the visitors at the stall:-

(1) NetSCoFAN- Biological Group(BIG)
(2) NetSCoFAN -Chemical Group(CHG)
(3) NetSCoFAN -Nutrition and Claims Group(NLG)
(4) NetSCoFAN -Foods of Animal Origin Group(FAG)
(5) NetSCoFAN -Food of Plant Origin Group(FPG)
(6) NetSCoFAN -Water and Beverages Group(WBG)
(7) NetSCoFAN -Food Testing Group(FTG)
(8) NetSCoFAN -Safer and Sustainable Packaging Group (SPG)
(9). Information about Rapid Testing Kits

5.0 Mobile Food Testing Laboratory:

A Mobile Food Testing Laboratory van was also installed at the exhibition for testing of food to develop confidence amongst consumers that the food should be safe to eat and testing is important part of the food safety ecosystem. Mobile Food Testing Labs called Food Safety on Wheels are being provided to States by FSSAI to enable them reach out to consumers through as many touch points as possible for testing, training and awareness generation.

6.0 NeTSCoFAN Lead Institution participation:

ICAR-Central Institute of Fisheries Technology (ICAR-CIFT) represented as NeTSCoFAN Lead Institution in the FSSAI pavilion in 107thIndian Science Congress (ISC) – Pride of India expo Demonstration of rapid testing kit for checking adulteration of formaldehyde and ammonia in fresh fish, a technology developed by ICAR-CIFT was carried out.

Smt. Laly. S. J, Scientist, Mumbai research centre of ICAR-CIFT and Sri. Aneesh. P.A, Senior technicalAssistant, Quality Assurance and Management Division of ICAR-CIFT, Cochin attended the ISC expo and made demonstrations of rapid testing kit for detecting adulteration of

formaldehyde and ammonia in fresh fish. Explanations on the rapid testing method were made to many delegates of Indian science congress and public during the five day expo period in the FSSAI stall. The CIFT team interacted with the visitors regarding the harmful nature of these chemicals and many have expressed the usefulness of the technology in controlling fish adulteration in the country.

Director, DFRL and scientists working in different organizations like CSIR, ICMR, DRDO etc visited and interacted with CIFT team. Opportunity provided by FSSAI in the Pride of India expo was highly appreciable as it was a suitable platform to bring the technology to general public and to increase the awareness among consumers.

7.0 Experience and Take away:

The FSSAI stall was visited by a large number of delegates, including students, academicians, researchers, speakers, experts, policy makers and exhibitors. The visitor's discussion with the FSSAI official was on various sectors of FSSAI mostly on NetSCoFAN. Clarifications and queries were attended with utmost attention by the FSSAI officials with pictures and explanation using pamphlets and display boards. This types of exhibitions helps the FSSAI efforts for engaging the scientific fraternity, academia, R&D institutes for improving in development of science based standards, guidelines and policies.


Queries of visitors being addressed

7. Conclusion:

FSSAI's participation in the 107th Indian Science Congress served a great platform for FSSAI's effort to engage the scientific fraternity, academia, R&D institutes in the NetSCoFAN network. Officials from State and Central Government Ministries attended the FSSAI stall and highly appreciated the efforts of FSSAI to ensure safe and nutritious food for 130 crore Indian citizens on Pan-India basis. The design, concept, information provided in the stall and FSSAI's initiatives under Eat Right India were appreciated by various visitors who visited the stall. The inputs, suggestions will help the FSSAI improving in development of science based standards, regulations, guidelines and policies.

PHOTO GALLERY