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NATIONAL DAIRY DEVELOPMENT BOARD

CALF Chronicle

FSSAI NOTIFIES CALF AS NATIONAL REFERENCE LABORATORY

In August 2019, Food Safety and Standards Authority of India (FSSAI) approved CALF as National Reference Laboratory (NRL) under Regulation 3 of Food Safety and Standards (Recognition and Notification of Laboratories) Regulation, 2018 for Dairy and Dairy products. A total of 13 laboratories from all over India have been identified as NRL.

As NRL, CALF has successfully conducted analytical development on various food safety challenges i.e. detection of adulteration in Ghee; detection of triacontanol in milk; and effect of the preservatives on analysis of fortificant vitamins in milk.
CALF has also conducted four Proficiency Testing Programmes in Chemical and Biological analysis as per ISO 17043:2010 in 2020, wherein various analytical laboratories participated and have been evaluated.

As notified by FSSAI, each reference lab will carry out following functions :

- Be a resource centre for providing Certified Reference Materials (CRMs) or Standard Reference Materials (SRMs)
- Develop standards for routine testing procedures and reliable testing methods
- Provide technical support in the areas of competence
- Evaluate the performance of other notified laboratories
- Coordinate exchange of information amongst notified laboratories
- Collaborate for data generation among the network of notified food laboratories and referral food laboratories and collate the data related to their specific domain
- Other functions, as may be specified by the Food Authority from time-to-time in the related areas

CALF is the only NABL accredited laboratory in the country for carrying out complete authenticity testing as per the regulatory requirement.

HONEY TESTING LABORATORY

The authenticity of honey is one of the most crucial aspects of honey testing besides quality parameters, residues and contaminants. CALF, NDDB with support from National Bee Board (NBB) has set up an accredited, state-of-the-art honey testing facility for checking the authenticity of honey covering various tests like C4 sugar, specific marker for rice syrup (SMR), trace marker for rice syrup (TMR), portion of foreign oligosaccharide, δ13C Max, δ13C Fru-Glu, and δ13C Protein-Honey.

The laboratory has also established facility for testing pesticides, antibiotics, heavy metals and various physicochemical tests in honey as per the requirement of FSSAI and Residue Monitoring Plan (RMP) of EIC for export purpose.

LC-IRMS/ EA-IRMS

NEW METHOD DEVELOPMENT

Dioxin and Furans Analysis

With highly dedicated efforts of the technical team during the past few years, the laboratory successfully set-up accredited facility for dioxins-furans, dioxins like PCBs and non-dioxins like PCBs* (35 different compounds) as per EU-644/2017 requirement for milk and milk products on APGC-MS/MS with semi-automated sample preparation unit purchased with financial support from the Ministry of Food Processing Industries (MoFPI). This facility is expected to provide impetus to the export of milk and milk products as currently, CALF holds the distinction of being the only NABL accredited facility in India for dairy products.

(*17 dioxins and furans, 12 dioxin like PCBs, and 6 non-dioxin like PCBs)

Detection of Methyl Mercury

The laboratory has developed and validated a methodology on QQQ-ICPMS-LC for the estimation of methyl mercury in milk and milk products, food and feed with financial assistance from FSSAI. This is the only NABL accredited facility in the country for methyl mercury as per FSSAI requirements using latest & advanced technology like QQQ-ICPMS hyphenated to liquid chromatography.

Estimation of Antibiotics & Veterinary Drugs

CALF has developed and validated methods for analysis of antibiotics and veterinary drugs (35 different compounds) in milk as per FSSAI. The protocol used for validation is as per EU/657/2002 on LC-MS/MS.


GC-MS/MS

LC-MS/MS

CALF is recognised by Agricultural and Processed Food Products Export Development Authority (APEDA) for fruits (Pomegranate, Grapes, Mango, Apple, Banana and other Fruits) and vegetables (Okra, Cabbage, Bottle Gourd, Brinjal, Potatoes, Leafy Vegetables and other Vegetables).

CALF STANDARDISES RAPID PCR BASED

METHOD TO TEST MILK AUTHENTICITY

RT-PCR & GENETIC ANALYSER

Recently, with increasing consumption of dairy food items, the species identification of milk and milk products has received a great deal of attention. It has significant importance for several reasons related to government regulations, region and public health. The extensive consumption of milk and dairy products makes these foodstuffs target for potential adulteration with financial gains for unscrupulous producers. CALF of NDDB has standardised PCR based qualitative test for mix milk analysis which would enable us to detect the adulteration of buffalo milk in cow milk and vice versa at 1% detection limit. It utilises primers targeting the mitochondrial encoded 12S rRNA gene. The PCR assay involves use of three different primers with common forward primer (12SM-FW) and different reverse primers specific for cow (12SBT-REV2) and buffalo (12SBuf-REV2).

TESTING FACILITIES
FOR VARIOUS NEW PRODUCTS

The facility for testing of various new products as per FSSAI regulations has been standardised at the laboratory, which are listed below:

Microbiology Testing

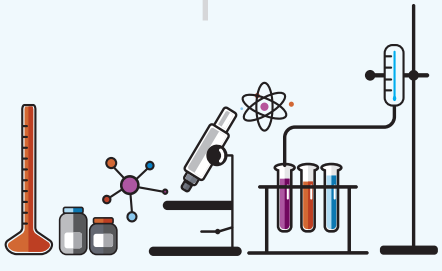
Cereal, pulses & cereal products, coffee & cocoa products, cultures for baking & brewing, dairy starter cultures, probiotics cultures, edible salt, Herbs & spices, honey & honey products, jam, juices & sauces, nut & nut products, oil seeds, snacks & instant mixes (ready-to-eat products), sugar & sugar products, air monitoring & swab testing.

GMO Testing

Cotton, maize, soya, spice, rice, honey, rapeseed and wheat, etc.

Chemical Testing

Cereal, pulses & cereal products, herbs, spices & condiments, honey & honey products, nut & nut products, sugar & sugar products, nutraceuticals & functional foods and ready-to-eat products.



CALF ASSOCIATES WITH MPRNL PROJECT OF ICAR

The laboratory is associated with Monitoring of Pesticides Residues at National Level, where farm gate and market samples of various fruits & vegetables, milk, pulses and spices are collected every month from seven locations in three states. These samples are analysed for approx. 178 pesticides by using LC-MS/MS and GC-MS/MS.

LAB PARTICIPATES IN PROFICIENCY TESTING PROGRAMMES

The laboratory participated in 18 Proficiency Testing Programmes (National/International) and 4 ILC programme for various parameters in honey, food, water, genetics and dairy products. The laboratory has qualified satisfactorily in most of the tests, indicating a high level of accuracy and competency standards maintained at the lab.

TRAINING PROGRAMMES

In 2019-20, CALF organised four customised training programmes for Quality Control Officers from dairy industry in which 68 persons participated.

The first training programme was organised between 22 and 26 April, 2019 for officials from Oman-based Mazoon Dairy. They were trained on various laboratory operations along with various microbiological and chemical parameters.

The next training programme was conducted between 14 and 18 October, 2019 on microbiological analysis of milk and milk products. The participants were provided hands on training on handling of sample and sampling techniques, analysis of pathogens in milk and milk products.

The third training programme on chemical analysis of milk and milk products was arranged between 2 and 6 December, 2019. The training was mainly focused on analytical requirements for milk and milk products as per FSS Act 2006.

A training programme was conducted during 3 to 7 February, 2020 on analysis of feed and feed ingredients. Officials from cattle feed plants across India underwent the training.

The participants expressed satisfaction on facilitation of hands on training on various testing procedures and access to high end equipment during the programmes.

Duration: 22-26 April 2019
Training on Analysis of Milk & Milk Products for Mazoon Dairy, Oman

Duration: 14-18 Oct 2019
Training in Microbiological Analysis of Milk & Milk Products

NATIONAL DAIRY DEVELOPMENT BOARD

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