CEPC LABORATORY
AND TECHNICAL DIVISION

Analysis
Research
Project
Training

CEPCI
The Cashew Export Promotion Council of India
[Sponsored by the Government of India]

The CEPCI Laboratory and Technical Division, the analytical, research and training wing of CEPCI was set up in 1997 with assistance from the Government of India and is engaged in carrying out analytical as well as basic, applied and advanced researches in Chemistry, Bio-Chemistry, Bio-Technology, Food Technology, Microbiology and Environmental Sciences. The services of this Laboratory & Technical Division are available to the entire food processing industry in India and abroad including regulatory bodies, Government organizations and NGO's.

The lab is equipped with the most modern analytical instruments and associated facilities. It houses state–of-the-art equipments like LC-MS/MS, GC-MS/MS, HPLC, HPTLC, AAS, RT-PCR, FTIR and a fully automated microbial detection/enumeration system.

The lab adopts double-blind protocols and procedures as prescribed by the Indian FSA, the USFDA, the European FSA and Codex Alimentarius Commission.

Scientists and other technical personnel are well qualified with technical expertise in the area of testing, research, training and consultancy services.

Accreditations/Recognitions

1. The DSIR (Department of Scientific and Industrial Research, Govt.of India) recognition.
2. NABL accreditation for Biological and Chemical testing as perIS0/IEC'17025:2005.
3. FSSAI Notified Laboratory
4. Bureau of Indian Standards for analyzing-packaged drinking water as per IS 14543:2004
5. A 3Gradecertication from the Kerala State Pollution Control Board for analysis of water, waste water and solid wastes.

The laboratory is recognized as a Doctoral research centre under Kerala & Kannur University.

Divisions

The CEPC Lab comprises of three divisions covering following disciplines:

■ **Chemistry** ■ **Microbiology** ■ **Entomology & Biotechnology**

CHEMISTRY DIVISION

This division has a sophisticated assortment of highly sensitive analytical equipments for detecting ppb levels of micro contaminants like pesticide residues, mycotoxins, heavy metal residues etc in accordance with food regulations of domestic as well as major markets across the world.

List of major instruments available are:

- LC MSMS (Waters India Pvt. Ltd, USA)
- GC MSMS (Agilent, USA)
- Gas Chromatograph (Agilent, USA)
- High Performance Liquid Chromatography (Waters India Pvt. Ltd, USA)
- Atomic Absorption Spectrometer
- (Perkin Elmer)
- Head Space gas analyzer (PBI Dan sensor)
- UV-VIS Spectrophotometer (Perkin Elmer)
- FTIR
- ELISA Reader

Details of major tests carried out for Food & Agricultural products are:

1. Organo chlorine Pesticides
2. Organo phosphorus pesticides
3. Synthetic pyrethroids
4. Aflatoxins (Quantitative & qualitative),
5. Free Fatty Acid
6. Peroxide Value
7. Moisture
8. Heavy metals
9. Quality Analysis as per AFI/UNECE/ CEPC
10. Roast test
11. Health certificate
12. Nutritional analysis
13. Rodenticides
14. Chlorophenols
15. 2, 4 D
16. Tests for cashew nut shell liquid
17. Drinking Water:- All tests as per IS 10500:2012
19. Packaged drinking water:- All tests as per IS 14543:2004
20. GCMS Analysis of oils/extracts
21. LCMS Analysis of oils/extracts
22. IR Spectrum
23. Lead content in solder
24. Biological Oxygen Demand(BOD)
25. Chemical Oxygen Demand(COD)

MICROBIOLOGY DIVISION

Has both Conventional and Microbial automation systems to meet customer demands and requirements of the international standard ISO /IEC 17025 :2005. Wide range of methodologies , including USFDA-BAM, AOAC,I SO, IS &APHA and customer supplied procedures are adopted.

Products /Services of this division covers:

- Food & Agricultural products
- Water -Drinking water/Packaged Drinking Water/ Swimming pool & Waste Water
- Cosmetics & Pharma products
- Antimicrobial Testing
- Environmental sampling and testing from surfaces using Contact Plates, swabs and finger dabbing and microbial air flora by Passive and Active air monitoring.
- Microbial Culture identification –using automated, computer based method of species identification / Phenotypic Characterization using VITEK Cards (AOAC-OMA approved)
- Produces results quickly with in 24 hrs , or at the most 72 hrs, depending on the type of test carried out.

Food & Agricultural products	Drinking Water/Waste Water/ Packaged Drinking Water
Total Plate Count	Total Plate Count @ 37^{0}C/22^{0}C
Coliform	Total Coliforms
E.coli	Thermotolerant Coliforms & E.coli
Faecal Streptococci/ Enterococci	Faecal Streptococci
S.aureus count	S. aureus
Salmonella Spp.	Salmonella
Bacillus cereus count	Shigella
V. cholerae (Isolation)	V. cholerae
Yeast & Mold count	V. parahaemolyticus
Clostridium perfringens count	Sulphite reducing anaerobes (Spores of Clostridia)
Enterobacteriacea count	Pseudomonas aeruginosa
Listeria spp. & Listeria monocytogenes (Isolation)	Yeast & Mold
Aciduric Flat Sour Organisms	Lipolytic & Proteolytic bacteria
Lactic Acid bacteria	Thermophilic bacteria
Vibrio Parahaemolyticus	
Camphylobacter	
Staphylococcus enerotoxin	
E.coli O 157 : H7	
Clostridium botulinum	
Environmental Sampling and Analysis Swab samples/ contact plates/Finger dabbing/ Microbial Air Monitoring	

Major Instruments & Innovations

Automated Microbial systems

- Microbial enumeration system-TEMPO (Biomerieux, France)- Rapid enumeration of indicator organisms in Food samples
- Pathogen Monitoring system-VIDAS (Biomerieux, France)- Rapid Screening of Pathogens especially Listeria spp. ,Listeria monocytogenes, Salmonella , E. coli 0157 H7 & Camphylobacter
- Pathogen identification system-VITEK 2 Compact (Biomerieux, France)
- Microbial Air Sampler –Active air sampling (Merck Millipore)
- Fluorescent Microscope(Olympus)
- RT –PCR for detection of Salmonella spp., Listeria monocytogenes etc.

This system facilitates speedy release of microbial analytical results, well appreciated by the food processing industries. The system has been fully made operational and the analytical services can be availed with no extra cost.

BIOTECHNOLOGY DIVISION

Carries out

- Phyto-sanitary tests
- GMO tests
- SDS-PAGE analysis & Gel documentation
- HPTLC analysis (Qualitative & Quantitative)
- TGA analysis
- Slide viewing and image capture using Research and Stereo-microscope

List of Instruments/Equipments

- UV-VIS-NIR Spectrophotometer
- RT-PCR
- HPTLC
- TGA
- Gradient PCR
- Gel rocker
- UV- Transilluminator
- UV –TLC view cabinet
- Hybridization Apparatus
- Gel documentation system
- Sonicator
- Sigma centrifuge
- Table top Fermentor
- Research microscope
- Incubators
- Table top shaker with UV lamp and digital timer
- Adhesive matting bench top shaker
- Stereo-microscope

RESEARCH & DEVELOPMENT

The research wing provides guidance and facilities to students pursuing PhD / MPhil/ / MSc/ BSc in Chemistry, Bio-chemistry, Biotechnology, Microbiology and Environmental Sciences.

University recognitions

1. Kannur University for Doctoral Research programs in Microbiology, Bio technology and Chemistry.
2. Kerala University for Doctoral Research programs in Microbiology and Biotechnology.

Project modules

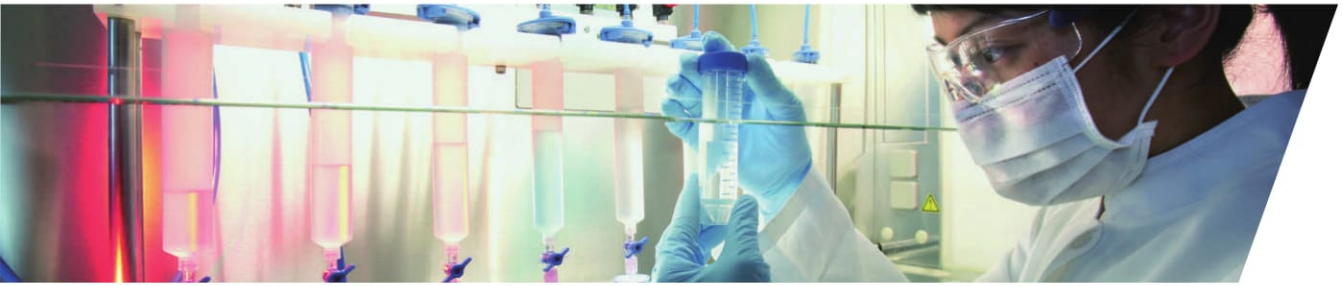
1.	M.Sc. Project	Three Months (Maximum)
2.	M.Phil Project	Three Months (Maximum)
3.	B.Sc. Project (Individual) B.Sc. Project (Group Project) B.Sc. Project (Individual)	Two Weeks One Month (Maximum) One Month (Maximum)

Research modules

1.	Ph.D Programs	Three Years (Maximum)

Key area are-

- Survey and risk assessment of indicator organisms &Pathogens in various foods
- Antimicrobial and bio efficacy study of various plant products of terrestrial and aquatic origin
- Biodegradation study of pesticides, heavy metals, Phenolic compounds and hydrocarbons
- Validation of rapid methods for pathogen testing and bioburden testing
- Production of enzymes and biofuel ethanol from plant materials and agricultural waste
- Bio surfactant production
- External aided projects
- Enzymology
- Biopesticides



CONSULTANCY & TRAINING

Provides consultancy services mainly covering:

- Design and Setting up of Biological & Chemical testing laboratory
- Awareness training to workers/supervisors on Good Manufacturing Practices in food manufacturing /production units.
- Implementation of HACCP & FSMS in food processing units.

TRAINING & COMPETENCY DEVELOPMENT

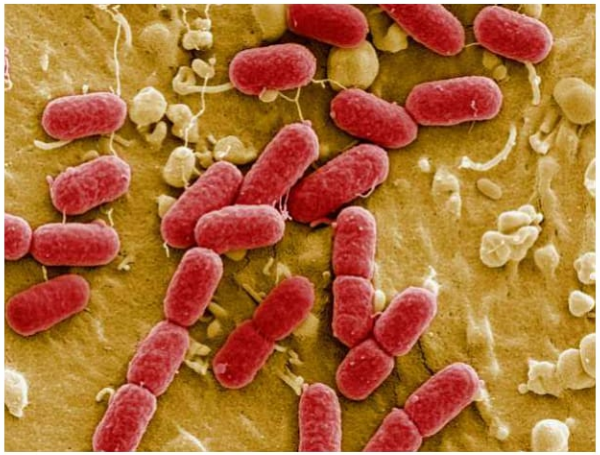
Training is now considered an essential element in the development of an efficient, quality conscious workforce. Training facility of the lab is fully equipped with state of the art equipments, dedicated training lab, lecture rooms, library etc.. Regular training programs are organized in the analytical field and Quality Management Systems. Our certificates are widely accepted and are highly useful to job seekers and upcoming entrepreneurs.

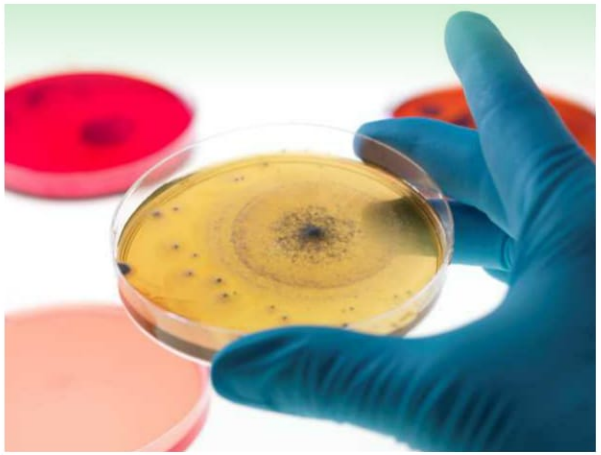
Hands-on training is provided to students and working professionals using the latest techniques and instrumentation in microbiological & chemical analysis to meet the growing needs of the Industry.

The Laboratory also designs and takes up tailor made customer specific training modules.

TRAINING PROGRAMMS

Sl No	Program particulars	Duration
1	Food Analysis (microbiological 12 parameters)	Three weeks
	Water Analysis (Microbiological 12 parameters) (6 parameters) (4 parameters)	Three weeks One weeks Five Days
2	Food Analysis (microbiological 8 parameters)	Two weeks
	Water Analysis (Microbiological 7 parameters)	Two weeks
3	HACCP Food Safety Management System	Five Days Five Days
4	Water Analysis (Chemical)	One Month
5	Food Analysis (Chemical)	One Month
6	Instrumentation techniques (LC- MS MS,/GC/GC-MSMS/HPLC/ AAS/ UV Spectrophotometer/ Water activity meter/ Moisture analyzer/pH meter and Turbidity meter etc)	One month
7	Food & Water analysis (combined)	One month
	Chemical Microbiological	One month
8	LC-MSMS	One week
9	GCMC/HPLC/AAS	Three Days (each)
10	Instrumentation-Biotechnology (RT-PCR, PCR, Electrophoresis, Gel Documentation System,HPTLC, UV-Vis-NIR Spectrophotometer, Bio-fermentor, Sonicator, Microscope and TGA)	One month (Maximum)
11	Microbial automation Enumeration (TEMPO) Pathogen Screening (VIDAS) Micribial identification (VITEK)	One week





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