

TEA TESTING SERVICES

BOOSTING TEA BUSINESSES
THROUGH TECHNOLOGY



EDWARD FOOD RESEARCH & ANALYSIS CENTRE



WHY CHOOSE US

- ✔ 60,000 Sq. ft. of World-Class Analytical Facility
- ✔ 11 Regulatory Accreditations & 3 International Recognitions
- ✔ Quickest Turn Around Time (TAT) in the Industry
- ✔ 21 CFR Coupled Instrumentation for Data Integrity & Security
- ✔ LIMS Platform with Bar-coding & Digital Encryption features
- ✔ All Machines & PCs with CSV Qualification
- ✔ Machines with Auto-samplers, Robotic Controls & DQ, IQ, OQ, PQ Qualification
- ✔ Microbiological Sections with Pressurized & Classified Clean Rooms
- ✔ Specialist Sample Collection Squad
- ✔ Online Customer Support & Report Portal
- ✔ State-of-the Art-Instrumentation

02 Tea Plant Types are the source for Tea, the 2nd most Popular Beverage Globally

- The small-leaved, milder, mellower, *C. sinensis* var *sinensis*
- The large-leaved, heartier, and more robust, *C. sinensis* var. *assamica*

Chemical Compounds in Unpicked Tea Leaves include

- Polyphenols (Catechins in Green, Theaflavins & their Polymers)
- Amino Acids, Enzymes, Pigments, Carbohydrates, Methylxanthines, Minerals, and Many Volatile Flavouring and Aromatic compounds.



TEA TESTING FOR



EXPORTS



Factors Influencing the Appearance and Flavour of Tea

- Tea Plantation's Elevation over Sea Level
- Soil Conditions, Weather Conditions, and Water Quality
- Age of the Tea Bushes, Plucking Serial (1st or 2nd Flush)
- Processing Methods Employed.

6

MAIN TRUE TEA CATEGORIES

- Black • Green • White • Oolong • Pu-erh • Purple
 - Matcha, is a Japanese Variety
-
- All 06 have Signature Characteristics and Processing Methods.
-

TEA APPLICATIONS

- Instant Tea, Extract Concentrate, Brewed, Black & Green Tea Extracts & Green Tea Powder
- Encapsulated Tea Aroma, etc. in Liquid, and Powder Forms for Instant & Cold Tea Applications
- Beverage- Cold, Carbonated, Mixes, Blends, Dips. Spreads, Cream Fills, Cakes, and Nutraceuticals.
- Cosmetic Products (skin biochemistry- Photoprotective, Anti-Cellulite, Microcirculation, etc.)
- Dairy, Oil and Meat Industries.

INDIAN TEA EXPORTS

- One of the largest Food Commodities Exported in India

Destinations Countries

Europe: E.U., U.K.

Far Eastern Asia & Australia: Russia, Ukraine, China, Japan, Malaysia, Australia

Central Asia: Kazakhstan, Azerbaijan, Armenia

Middle East: Saudi Arabia, Iran, UAE, Syria

Americas: USA, Canada

ANALYTICAL IMPERATIVES

- Large Number of Diverse Chemical Compounds
- Increasingly Stringent levels of - Safety, Quality, Authenticity & Traceability
- **Analyses:** Component, Physicochemical, Microbiological, Pesticide Residue, Heavy Metal and Toxin Analyses
- Catechins, Polyphenols, Tannin & Caffeine Contents



APPLICABLE

REGULATORY

FRAMEWORK

- NABCB as per ISO /IEC 17021
- FSSAI
- Tea Board of India
- APEDA
- Agmark
- BIS
- EIC

- AOAC
- AOCS
- E.U.
- FDA
- GBT
- JAS



SWOT ANALYSIS

- Increasing Acreage of Tea Plantations
- Use of modern Agricultural Methods
- Newer Fertilizers, and Pesticides
- Heightened Awareness of Carcinogens- PFAs and Nitrosamines
- Increased Scrutiny from Regulators, Users, and Importers.

EFRAC's TEA ANALYTICAL SERVICES

- Foundational Commitment to Business & Analytical Integrity
- Regulation Compliant Analytical facility
- Regulatory Accredited & Internationally Recognized
- Latest, Automated Instrumentation
- Qualified, Trained and Experienced Scientific Manpower
- Over a Decade of Hands-on Expertise in Tea Analyses as per National & International Regulations

PARAMETERS COVERED

SENSORY ANALYSIS

- Aroma
- Taste
- Flavour
- Colour

PHYSICAL ANALYSIS

- Particle Size
- Extraneous Matter
- Crude Fibre Content
- Water-insoluble Steam Volatile Oil

MICROBIAL ANALYSIS

- Yeast
- Mold
- Coliform
- E. Coli
- Salmonella etc.

Chemical Analysis:

- Moisture Content (m/m)
- Total Ash
- Acid Insoluble Ash
- Alkalinity of Water Soluble
- Ash (as K₂O)
- Water Soluble Ash
- Carbon-free Ash
- Water Soluble Extract

TOXINS

- Aflatoxin & Ochratoxin

METAL CONTAMINANTS

- Pb
- Cd
- As
- Hg
- CH₃Hg
- Cu
- Sn



Annexure-1 of



**PLANT
PROTECTION CODE**

INVOLVE EFRAC

SIP SAFETY



59 PESTICIDE RESIDUES

- | | | |
|----------------------------|------------------------|--------------------|
| ● Quinalphos | ● Paraquat dichloride | ● Methomyl |
| ● Propiconazole | ● Flubendiamide | ● Fenthion |
| ● Thiacloprid | ● Dicofof | ● Aldicarb |
| ● Chlorpyrifos | ● Fenpyroximate | ● Chlordane |
| ● Propargite | ● Emamectin Benzoate | ● Heptachlor |
| ● Hexaconazole | ● Glufosinate Ammonium | ● Lindane |
| ● Carbendazim | ● Fluvalinate | ● Endosulfan |
| ● Glyphosate | ● Bitertanol | ● D.D.T |
| ● Fenazaquin | ● Cyflumetofen | ● Methyl Parathion |
| ● Oxyfluorfen | ● Fenpropathrin | ● Ethyl Parathion |
| ● Thiamethoxam | ● Mancozeb | ● Fenitrothion |
| ● Deltamethrin | ● Lambda cyhalothrin | ● Monocrotophos |
| ● Hexythiazox | ● Formothion | ● Carbofuran |
| ● Spiromesifen | ● Diazinon | ● Cypermethrin |
| ● Bifenthrin | ● Phosphamidon | ● Acephate |
| ● Zineb as CS ₂ | ● Simazine | ● Imidacloprid |
| ● Carfentrazone-Ethyl | ● Ferbam | ● Acetamiprid |
| ● Etoxazole | ● Captafol | ● Dinotefuran |
| ● 2,4-D Amine Salt | ● Aldrin | ● Fipronil |
| ● Chlothianidin | ● Dieldrin | |



Country Specific MRLs Followed

| | | | |
|---|--------------------------|--|---------------------|
|  | European Union (EU MR) |  | Philippines (BAFS) |
|  | Great Britain (HSE) |  | Singapore (SFE) |
|  | Switzerland (POPOVA) |  | South Korea (MFDS) |
|  | Russia (Rospotrebnadzor) |  | Taiwan (FDA) |
|  | Saudi Arabia (SFDA) |  | Thailand (ACFS) |
|  | USA (EEA) |  | Vietnam (MOH) |
|  | GCC (GSO) |  | Australia (FSANZ) |
|  | Israel (MARD) |  | New Zealand (FSANZ) |
|  | China (GB 2763-2021) |  | Argentina (SENASA) |
|  | Hong Kong (CFS) |  | Brazil (ANVISA) |
|  | Indonesia (KP) |  | Canada (PMRA) |
|  | Japan (FFCR) |  | Costa Rica (SFE) |
|  | Malaysia (DOA) |  | South Africa (SABS) |
|  | New Caledonia (DAVAR) |  | India (FSSAI) |



MAJOR INSTRUMENTS



HRGC / HRMS



GC-MS



GC-MS/MS



GC-SC / PDHID



GC-FID



Q-Trap 4500



HPLC (PDA, RI, ELSD)



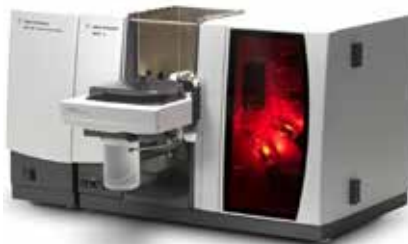
LCMS/MS



ICP MS



PS Analyzer



AAS (VGA/GTA/Flame)



TGA Analyzer



TOC Analyzer



ELISA Reader



DSC



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