Sample Prep for Metabolomics & Lipidomics — Hands-on

Learn how to go from biological material to extract-ready vials in a way that preserves small molecules and enables reproducible metabolomics and lipidomics data. This module focuses on biospecimen handling, matrix-specific extraction protocols, lipid-focused workflows and QC-aware sample preparation that integrates cleanly with GC–MS, LC–MS and NMR pipelines.

Sample Prep for Metabolomics & Lipidomics

Help Desk · WhatsApp

Session Index

Session 1

Fee: Rs 8800 Apply Now

Biospecimen Types & Collection Workflows

Overview of matrices for metabolomics and lipidomics

serum / plasma / whole blood **urine, saliva, CSF** **tissues and cultured cells**

Pre-analytical variables and collection SOPs

anticoagulants and collection tubes **clotting, centrifugation and processing time** **temperature control and transport**

Aliquoting, labelling and chain-of-custody

barcodes and manifests | biobanking practices | freeze–thaw cycle control

Session 2

Fee: Rs 11800 Apply Now

Metabolite Extraction Protocols & Optimization

Protein precipitation and solvent systems

methanol / acetonitrile protocols | cold extraction and quenching | handling high-protein matrices

Matrix-dependent extraction workflows

biofluids vs tissues vs cells | homogenization and bead beating | solid phase extraction basics

Internal standards and recovery checks

stable isotope labelled standards | spike-in strategies | recovery and matrix effect evaluation

Session 3

Fee: Rs 14800 Apply Now

Lipid Extraction & Class-Specific Enrichment

Classical and modern lipid extraction methods

Folch and Bligh–Dyer | MTBE based extraction | phase separation and fractionation

Lipid class enrichment and clean up

phospholipids, sphingolipids, neutral lipids | solid phase and silica cartridges | minimizing oxidation and degradation

Storage, evaporation and reconstitution for LC–MS

nitrogen / vacuum evaporation | solvent choices for injection | lipid QC samples and checks

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: End-to-End Sample Prep Plan

Design a sample prep workflow for a use case

clinical, nutrition or cell culture study

QC- and contamination-aware layout

blanks, QCs and standards **carryover and background control** **robustness and reproducibility checks**

Final sample prep SOP and checklist deliverable

stepwise SOP document **reagent and consumables list** **safety and waste handling notes**