Targeted Metabolomics — Absolute Quantitation & Validation — Hands-on

Move from discovery profiling to rigorous, reportable numbers. This module focuses on targeted metabolomics assay design, internal standard strategy, calibration curve construction, and method validation parameters so that you can deliver absolute concentrations and decision-grade readouts for biomarkers and panels.

Targeted Metabolomics — Absolute Quantitation & Validation

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Session Index

Session 1

Fee: Rs 8800 Apply Now

Principles of Targeted Metabolomics & Panel Design

Why and when to move from untargeted to targeted panels

biomarker verification **clinical decision support** **fit-for-purpose validation**

Choosing metabolites and matrices for targeted assays

biological rationale **dynamic range & abundance** **matrix complexity & interferences**

Overview of LC–MS/MS and MRM / SRM concepts for targeting

precursor / product ions **dwell time & cycle time** **scheduled MRM (concepts)**

Session 2

Fee: Rs 11800 Apply Now

Calibration Curves, Internal Standards & LC–MS Methods

Designing calibration curves for absolute quantitation

concentration ranges **number of levels & replicates** **weighting (1/x, 1/x²) concepts**

Internal standards and response factor calculations

stable isotope labelled IS **class-specific surrogates** **IS-normalized signals**

Translating a targeted panel into an LC–MS/MS method

MRM transition list **collision energy & cone voltage** **chromatographic alignment**

Session 3

Fee: Rs 14800 Apply Now

Method Validation: Linearity, Precision, Accuracy

Key validation parameters for targeted metabolomics methods

linearity & R² **intra / inter-day precision** **accuracy & bias**

LOD, LOQ, recovery and matrix effects (concepts)

signal-to-noise approaches **spike-recovery studies** **post-column vs post-extraction spike**

Stability assessments for standards and real samples

freeze–thaw stability **bench-top / autosampler** **long term storage checks**

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Validation Plan & Quant Report Template

Drafting a validation plan for a targeted metabolite panel

Theory + Practical

Structuring acceptance criteria and QC rules for routine runs

control charts & QC samples | rejection / repeat criteria | documentation checklist

Deliverables: validation summary & absolute quant report template

validation plan and summary (PDF/Word) | calibration & QC tracking sheet (XLS/CSV) | quant results report template