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Type: **Tutorial**

Tutorial 3: SOPs for the metabolic analysis of large cohorts of samples, Dr. Óscar Millet

Monday, 25 November 2024 13:10 (50 minutes)

Standardized operating procedures (SOPs) are critical for ensuring reliability, reproducibility, and comparability in NMR-based metabolic analysis, particularly when analyzing large cohorts of samples. We will present a comprehensive SOP framework designed to optimize NMR-based metabolomic profiling in high-throughput settings, addressing challenges such as sample preparation, spectral acquisition, data processing, and quality control. We will focus on minimizing variability through consistent sample handling, calibration protocols, and automated spectral analysis pipelines. By implementing these SOPs, we aim to establish a robust workflow that enhances sensitivity and specificity in detecting metabolites, enabling high-fidelity metabolomic profiling across extensive sample sets. Our protocols are validated through the analysis of a large cohort, demonstrating significantly reduced intra- and inter-run variability and improved reproducibility. These SOPs provide a valuable resource for large-scale studies aiming to utilize NMR metabolomics for biomarker discovery, population health studies, and personalized medicine applications. The framework can be adapted and refined for different biological matrices and metabolomic study designs, underscoring the importance of standardization in advancing metabolomics research on a broad scale.

Field

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Session Classification: Tutorials