

Technical Bulletin

Bile Acids Standard Mixture

Catalogue number SMB00967

Product Description

A method of choice in either targeted or untargeted metabolomics is liquid chromatography–mass spectrometry (LC-MS) or gas chromatography–mass spectrometry (GC-MS). For targeted or untargeted metabolomics having an internal standard is essential to overcome the ion suppression, ion variability and drifting signal when metabolomics studies are performed using mass spectrometry. For overcoming these problems, a deuterated isotopic labeled internal standard most likely provides the best outcome for MS analysis.

Bile acids are steroid compounds that are derived from cholesterol. Bile acids are synthesized in the liver and play a crucial role in metabolic process (e.g., cholesterol and lipid metabolism) and liver health. They also regulate triglyceride, glucose and energy homeostasis etc. as a signaling molecule.

The Bile Acids Standard Mixture is an isotopic labeled mixture formulated for use as internal standard and for high-throughput LC/MS metabolomic analysis.

- All deuterated bile acids are dissolved in methanol and ready to use. Total vial volume is 1 ml.
- Simple mixture formulated to contain primary, secondary and conjugated bile acids.
- Ideal for LC-MS studies as internal standards and for high through put LC/MS analysis.
- The mixture can be used for targeted and untargeted approaches.

Components of the deuterated Bile Acids Standard Mixture.

See batch-specific CoA for measure concentrations

Deuterated Bile acids

Component
Taurochenodeoxycholic acid-d4
Glycochenodeoxycholic acid-d4
Glycocholic acid-d4
Cholic acid-d4
Chenodeoxycholic acid-d4
Deoxycholic acid-d4
Lithocholic acid-d4
Ursodeoxycholic acid-d4

Reagents required and not provided

Butylated Hydroxytoluene – B1378; EDTA – EDS; 1-cyclohexyluriedo-3-dodecanoic acid (CUDA) and 1-Phenyl 3-Hexadecanoic Acid Urea (PHAU); acetonitrile (ACN) - 34851; Methanol (CH3OH – 34860.

Precautions and Disclaimer

This product is for R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the sealed vials at -20 °C.

Preparation Instructions

The deuterated Bile Acids Standard Mixture is a ready-to-use solution.

Procedure

The following is an example procedure for use of the deuterated Bile Acid Mixture in LC-MS.

1. To 50 μL plasma Samples add 6.25 μL of deuterated Bile Acids Standard Mixture.
2. Add 10.0 μL of antioxidant (butylated hydroxytoluene and ethylenediaminetetraacetic acid (EDTA)) and 10 μL of 1000 nM 1-cyclohexyluriedo-3-dodecanoic acid and 1-phenyl-3-hexadecanoic acid urea.
3. Dilute to final volume of 250 μL with 1:1 acetonitrile:methanol.
4. Vortex and incubate at 20 $^{\circ}\text{C}$ for 30 min to precipitate protein, and centrifugate at 15,000 rcf for 5 minutes.
5. Filter through a 0.2 μM PVDF filter and store at -20°C until analysis.

References

Barupal, D.K., *et al.*, "A Comprehensive Plasma Metabolomics Dataset for a Cohort of Mouse Knockouts within the International Mouse Phenotyping Consortium." *Metabolites* **9**, 101, (2019)

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