Product Information Sheet

Amino Acids Standard Mixture

Catalogue Number SMB00917

Product Description

Metabolomics is the study of metabolites (small molecules) from biochemical processes and pathways. Typically, metabolites are analyzed using two approaches - targeted and untargeted metabolomics. Targeted Metabolomics is the analysis of known specific chemical groups like lipids, amino acids, short chain fatty acids, etc. Untargeted Metabolomics is the analysis of all unknown compounds.

A method of choice in either targeted or untargeted metabolomics is liquid chromatography-mass spectrometry (LC-MS) or gas chromatography-mass spectrometry (GC-MS). Depending upon the functional group(s) of the metabolites, different extraction and derivatization processes, different chromatography methods (for example, Reversed Phase, Normal Phase, Ion-exchange phase, or HILIC) and negative or positive ion modes are required for analysis.

An internal standard is essential to overcome the ion suppression, ion variability, and drifting signal when metabolomics studies are performed using mass spectrometry. A deuterated Isotopic labeled internal standard provides the best outcome for the MS analysis.

The Amino Acid Standard Mixture is formulated for use as a concentration standard for high-throughput LC/MS or GC-MS metabolomic analysis.

- All deuterated amino acids are dissolved in water and ready to use. Total vial volume of 10 ml.
- Ready to use deuterated internal standards.
- Ideal for polar metabolites for HILIC chromatography.

Components of the deuterated Amino Acids Standard Mixture.
See batch-specific CoA for measured concentrations

Deuterated Amino Acids

Glycine (D5)	L-Histidine (D5)	L-Serine (2,3,3-D3)
L-Alanine (2,3,3,3-D4)	L-Isoleucine (D10)	L-Threonine (D5)
L-Arginine (D7)	L-Leucine (D10)	L-Tryptophan (D8)
L-Asparagine (2,3,3-D3)	L-Lysine (D8)	L-Tyrosine (D7)
L-Aspartic acid (2,3,3-D3)	L-Methionine (D8)	L-Valine (D8)
L-Cystine (3,3,3',3'-D4)	L-Ornithine (5,5-D2)	PI-Methyl-L-Histidine (D3)
L-Glutamic acid (2,3,3,4,4-D5)	L-Phenylalanine (D8)	TAU-Methyl-L-Histidine (D3)
L-Glutamine (2,3,3,4,4-D5)	L-Proline (D7)	DL-Homocysteine (3,3,4,4-D4)

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 2-8°C.

Preparation Instructions

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

Procedure

The following is an example procedure for use of the Amino Acid Standard Mixture in LS/MS.

1. Degas 1 ml of solvent mixture acetonitrile:isopropanol:water (3:3:2, v/v/v) chilled to -20 °C.
2. Add the 1 ml of degassed solvent mixture to 20 µL of sample plasma.
3. Vortex the sample (plasma-solvent mixture) for 10 seconds, then shake for 5 minutes.
4. Centrifuge the sample for 2 minutes at 14,000 rcf (relative centrifugal force).
5. Remove 450 µL of the supernatants and evaporate the residual sample to dryness.
6. Resuspend sample with 100 µL of acetonitrile:deuterium labeled Amino Acid Standard Mixture (80:20, v/v) as internal standard.
7. Analyze the samples by LC/MS using UPLC BEH Amide column.

References

Fiehn, O., Metabolomics by gas chromatography–mass spectrometry: Combined targeted and untargeted profiling. *Curr. Protoc. Mol. Biol.*, **114**, 30.4.1–30.4.32 (2016).

Barupal, D.K., et al., A Comprehensive Plasma Metabolomics Dataset for a Cohort of Mouse Knockouts within the International Mouse Phenotyping Consortium. *Metabolites*, **9(5),** 101 (2019).

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