Technical Bulletin

Fatty Acid Methyl Esters Standard Mixture

Catalog Number SMB00937

Product Description

The Fatty Acid Methyl Esters Standard Mixture is a metabolite mixture comprised of 13 fatty acids. Fatty acid methyl esters are dissolved in chloroform to the stated concentrations ± 4%. The product is formulated for use as a retention marker for high-throughput GC/MS metabolomic analysis.

Gas chromatography-mass spectrometry (GC-MS)-based metabolomics is used to identify and quantify small-molecule metabolites such as small acids, alcohols, hydroxyl acids, amino acids, sugars, fatty acids, sterols, catecholamines, drugs, and toxins.[1]

Fatty Acid Methyl Ester Standard Mixture composition

Component	Concentration (µg/mL)
Methyl octanoate	800
Methyl nonanoate	800
Methyl decanoate	800
Methyl laurate	800
Methyl myristate	800
Methyl palmitate	800
Methyl stearate	400
Methyl arachidate	400
Methyl behenate	400
Methyl tetracosanoate	400
Methyl hexacosanoate	400
Methyl octacosanoate	400
Methyl triacontanoate	400

Precautions and Disclaimer

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 vial at –20 °C.

Reagents Required But Not Provided

- Methoxyamine hydrochloride (Catalog Number 89803 or equivalent)
- Pyridine (Catalog Number 270407 or equivalent)
- N-methyl-N-(trimethylsilyl)-trifluoroacetamide (Catalog Number 69479 or equivalent)

Procedure

The following procedure is provided as an example application of the Fatty Acid Methyl Esters Standard Mixture.

1. Extract 30 µL samples of blood plasma with 1 mL acetonitrile:isopropanol:water (3:3:2) spiked with internal standards.
2. Centrifuge the sample mixtures.
3. Remove 450 µL of the supernatants and evaporate to dryness.
4. Reconstitute the residues in acetonitrile:water (1:1).
5. Centrifuge the solutions.

6. Remove the supernatants and evaporate to dryness.
7. Treat the residues with 20 mg/mL methoxyamine hydrochloride solution in pyridine and incubate with shaking at 30 °C for 1.5 hours.
8. Prepare derivatizing solution by adding 10 µL Fatty Acid Methyl Esters Standard Mixture to 1 mL N-methyl-N-(trimethylsilyl)-trifluoroacetamide.
9. Treat the sample extracts with 91 µL of the derivatizing solution from Step 8 and seal.
10. Incubate the derivatized solutions at 37 °C for 30 minutes.
11. Transfer the samples to glass vials with glass inserts and promptly cap.
12. Analyze the samples by GC/MS.

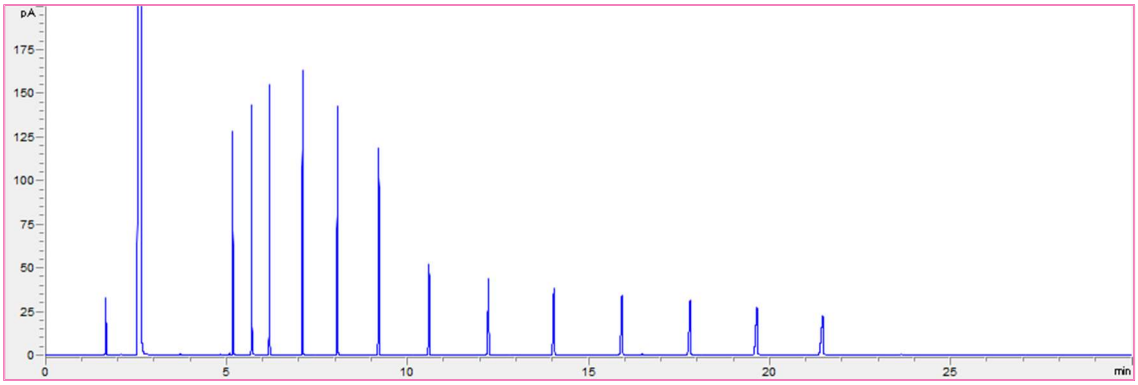
Results

Fatty acid methyl esters used in this standard show a strong, consistent m/z 87 ion and molecular ions which can be used to differentiate the individual peaks. See Figure 1 for example chromatograph with analysis details.

Reference

Fiehn, O., Metabolomics by gas chromatography–mass spectrometry: Combined targeted and untargeted profiling. *Curr. Protoc. Mol. Biol.*, 114 (1), 30–4 (2016).

Figure 1.



Instrument: Agilent Technologies 7890A
Autosampler: Agilent Technologies 7693

Column: Supelco SP-2380 30 m x 250 µm x 0.2 µm
Inlet: 250 °C **Detector:** FID 230 °C
Carrier Gas: He **Flow:** 0.92107 mL/min **Run:** 30 min

Oven:

Initial:		35 °C	**Hold:** 0.5 min
Ramp 1: 20 °C/min	**End Temp:**	160 °C	**Hold:** 0.0 min
Ramp 2: 5 °C/min	**End Temp:**	230 °C	**Hold:** 9.25 min

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