Lipid Analysis Services

Polyunsaturated Fatty Acids

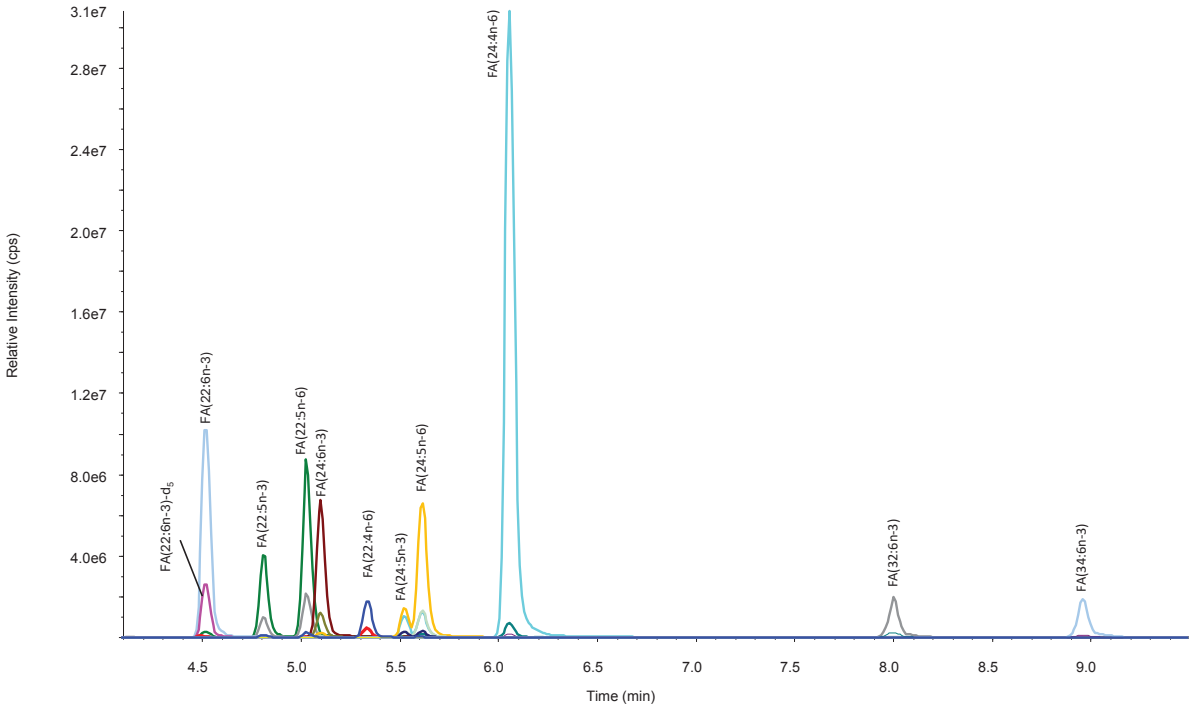
Polyunsaturated fatty acids (PUFAs) are unique within the broad class of fatty acids. They confer specific physical properties to biological membranes, where they are esterified in glycerophospholipids, and they are also precursors to a family of potent lipid mediators of inflammation collectively known as oxylipins. It is noteworthy that they are enriched in certain cells and tissues in mammalian systems, such as in immune cells, retina, or brain.

This service can be of interest to a wide variety of scientists, including researchers exploring the fundamental mechanisms of biology, clinicians looking for biomarkers or following up on a treatment, or companies testing potential therapeutic tools.

Analyte Coverage

We offer an analytical service to extract and analyze a panel of over a dozen PUFAs in biological samples either as free acids, esterified acyl chains, or both. The list can be customized to include additional fatty acids if necessary. Chromatographic resolution allows the separate integration of several n-3 and n-6 isomer pairs.

Analyte	Common Name (Abbreviation)
FA(20:5n-3)	Eicosapentaenoic Acid (EPA)
FA(20:4n-3)	Eicosatetraenoic Acid (ETA)
FA(20:4n-6)	Arachidonic Acid (AA)
FA(20:3n-6)	Dihomo-γ-Linolenic Acid (DGLA)
FA(22:4n-6)	Adrenic Acid
FA(22:5n-3)	Docosapentaenoic Acid (DPA)
FA(22:6n-3)	Docosahexaenoic Acid (DHA)
FA(24:4n-6)	Tetracosatetraenoic Acid
FA(24:5n-3)	Tetracosapentaenoic Acid, Omega 3
FA(24:5n-6)	Tetracosapentaenoic Acid, Omega 6
FA(24:6n-3)	Tetracosahexaenoic Acid
FA(32:6n-3)	Dotriacontahexaenoic Acid
FA(34:6n-3)	Tetratriacontahexaenoic Acid



LC-MS chromatogram traces of authentic PUFAs and deuterated internal standards.

Our Approach

Samples are extracted using a liquid-liquid method that can include an optional saponification step, allowing for the quantitation of free and total (free and esterified) PUFAs. The method has been tested from as little as 20 µl plasma or 5 mg tissue.

Reversed-phase HPLC and tandem mass spectrometry resolve all analytes and enable independent integration and relative quantitation.

The use of isotopically labeled internal standards helps achieve accurate and precise relative quantitation of the PUFAs present in biological samples.

Our Advantages

- Our scientists are expertly trained and have decades of collective experience in the analysis, synthesis, and evaluation of biological roles of lipids.
- State-of-the-art instrumentation, reagents, and methods for all aspects of sample preparation, lipid extraction, LC-MS analysis, and data review ensure consistent, high-quality data.
- Method is scalable, from pilot studies with a few samples to high-throughput studies with hundreds of samples.
- High-quality standards produced in-house enable accurate calibration curve preparation and reliable quantitation.
- Collaborative, flexible approach. The method can be customized to include, remove or substitute analytes, or to be used with samples other than plasma. Please inquire for specific details.

Contact us for more information at **www.caymanchem.com/lipidomics**

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