Lipid Analysis Services

# Sphingolipids V: Gangliosides

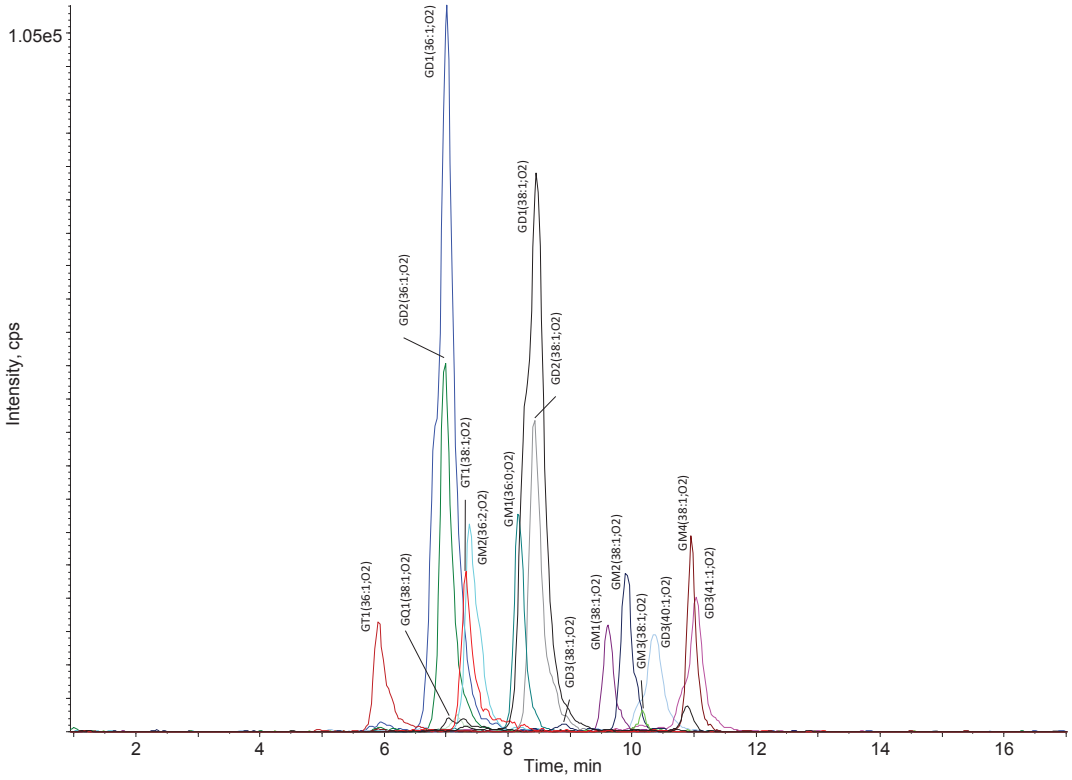
The sphingolipid (SP) category of lipids is very structurally diverse due to the multitude of combinations of sphingoid bases, N-acyl chains, and polar heads, so comprehensive analysis of all relevant sphingolipids in a biological system is not achievable with a single analytical approach. Gangliosides are sialylated oligoglycosylceramides which are found in mammalian tissues and body fluids and play important roles in diverse biological processes, particularly well-studied in the central nervous system. Defects in their metabolism are involved in diseases such as Tay-Sachs, Alzheimer's or Parkinson's diseases. Although their complexity makes the comprehensive analysis of gangliosides challenging, screening of these lipids can help understand various disease states, uncovering underlying mechanisms or novel routes of disease progression, and lead to potential new therapeutic targets.

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 a comprehensive analytical service covering several subclasses of gangliosides. Customize this panel by selecting the required molecular species, reported as sum composition.

| Subclass | Sphingoid Bases (examples) | N-Acyl Chains (examples) | Sum Composition (examples) |
|---|---|---|---|
| GM1 | 16:0;O2 | 16:0 | 30:1;O2 |
| GM2 | 16:1;O2 | 16:1 | 34:1;O2 |
| GM3 | 18:0;O2 | 18:0 | 36:2;O2 |
| GM4 | 18:1;O2 | 18:1 | 37:1;O2 |
| GD1a/b | 20:0;O2 | 20:0 | 40:1;O2 |
| GD2 | 20:1;O2 | 22:0 | 41:1;O2 |
| GD3 | | 23:0 | 42:2;O2 |
| GT1a/b | | 24:0 | 44:2;O2 |
| GQ1a/b | | 24:1 | 45:2;O2 |
| | | 24:1;O | |
| | | 26:0 | |
| | | 26:1 | |




LC-MS chromatogram traces of a mixture of gangliosides from natural sources.

# Our Approach

Samples are extracted using an established liquid-liquid method. Our lab is equipped to handle large sample sets, and the method has been tested with as little as 300 µl plasma, one million cells (like fibroblasts), or 100 mg tissue (brain, liver, kidney, heart, or lung).

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

The use of isotopically labeled internal standards helps achieve accurate and precise relative quantitation of gangliosides 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 absolute quantitation.

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