



# Sebum Lipid Panel

## Targeted Assays at Metabolon

Metabolon's mass spectrometry-based targeted assays provide precise measurements of metabolites in a wide variety of sample matrices. Assays can be customized based on the sponsor's needs and developed and validated for research use only (RUO) or under Good Clinical Practice (GCP). In addition to custom assay development and validation, sponsors can select from an ever-expanding set of >250 pre-developed assays or one of our discrete panels focused around related biomarkers such as our Sebum Lipid Panel.

## Sebum Lipid Panel

Sebum is a complex mixture of lipids secreted by mature sebocytes onto the surface of skin. Sebum may have antimicrobial, photoprotection and vitamin delivery functions, and changes in the concentration and composition of sebum are related to acne and other skin disorders. Sebum is comprised of an unusual mix of lipid classes that is remarkably different in quantity and quality from lipids found in other organs. Major components are triglycerides, wax esters, squalene and free fatty acids. The fatty acid composition of the complex lipids and the free fatty acid fraction is unique to human skin. Large amounts of the unusual sapienic acid (16:1n10) as well as a variety of odd and branched chain fatty acids are present.

**Contact us to get started**  
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Lipid Class	Measured Lipid Species	
<b>GC/MS-FAME Analysis</b>		
Total Fatty Acids	31	
Saturated – Straight Chain		12:0, 13:0, 14:0, 15:0, 16:0, 17:0, 18:0, 20:0, 21:0, 22:0, 23:0, 24:0
Saturated – Branched Chain		12:0-iso, 13:0-iso, 13:0-anteiso, 14:0-iso, 15:0-iso, 15:0-anteiso, 16:0-iso, 17:0-anteiso, 18:0-iso, 19:0-anteiso, 20:0-iso, 21:0-iso, 21:0-anteiso
Unsaturated – Straight Chain		16:1n10, 18:2n10, 16:1n7, 18:2n6, 18:3n3, 18:1n10/18:1n9
<b>FIA-MRM-MS Analysis</b>		
Lipid Class	Abbreviation	Number of Species
Cholesterol Esters	CE	26
Diacylglycerols	DAG	47
Squalene	SQ	1
Triacylglycerols	TAG	575
Wax Esters	WE	295
<b>Total</b>		<b>944</b>

## Method Summary

Sebum tapes are extracted in methanol and subjected to two parallel analyses, GC/MS-FAME and LC/MS. In the GC/MS-FAME assay, all free and conjugated fatty acids are converted into methyl esters and analyzed on a Agilent 7890A/5975C GC/MS system equipped with a DB-225 column (Agilent Technologies, CA) using hydrogen as the carrier gas. Mass spectrometric analysis is performed in the single ion monitoring (SIM) positive mode with electron ionization. Quantitation is performed using a regression analysis generated from fortified calibration standards, to report the absolute concentration (nmol/tape) of 32 fatty acids (see table).

The remaining extract is directly infused into a SCIEX QTRAP 5500 mass spectrometer for a Multiple Reaction Monitoring (MRM-) based analysis of 944 individual lipid species from five lipid classes. Accurate quantitation is performed by comparison to at least one isotopically labeled internal standard per lipid class, infused at known concentration. These data are reported as both molar concentration (nmol/tape) and mole percent composition of individual lipid species, lipid classes, as well as constituent fatty acids within each lipid class and across the entire panel. Together, the complementary data from the GC/MS-FAME and MRM analyses provide unparalleled insight into the unique complex lipid composition and fatty acid constituents of sebum.