

ANALYSIS OF FATTY ACIDS

Description: Gas Chromatography Mass Spectrometry method for the detection of free fatty acids. Samples are extracted using Methanol/Chloroform/Water (Bligh and Dyer's method). Free fatty acids in the organic phase are transformed by trans-esterification into fatty acid methyl esters (FAMES) and measured by GC/MS using C17:0 (Margaric acid) as an internal standard for normalization.

Container: cell pellets, plasma/serum, ground tissue (1.5 mL safe-lock Eppendorf tube); adherent cells (petri dish)

Optimal Volume/Amount: plasma/serum (50 µl); Tissue (25 mg)¹; Cells (6-10 Mio)².

Sample Collection: Please see our detailed sample collection protocols.

Quantification: not available; data are provided as signal intensities to fold-changes/ratios between sample groups

List of detectable compounds

Fatty Acid	Short name
Pentadecanoic Acid	C15:0
cis-10-Pentadecenoic Acid	C15:1
Palmitic Acid	C16:0
Palmitoleic Acid	C16:1
Heptadecanoic Acid	C17:0
cis-10-Heptadecenoic Acid	C17:1
Stearic Acid	C18:0
Oleic Acid	C18:1n9c
Elaidic Acid	C18:1n9t
Linoleic Acid	C18:2n6c
Linolelaidic Acid	C18:2n6t
gamma-Linolenic Acid	C18:3n6
alpha-Linolenic Acid	C18:3n3
Arachidic Acid	C20:0
alpha-Linolenic Acid	C18:3n3

Fatty Acid	Short name
Arachidic Acid	C20:0
cis-11-Eicosenoic Acid	C20:1n9
cis-11,14-Eicosadienoic Acid	C20:2
cis-8,11,14-Eicosatrienoic Acid	C20:3n6
cis-11,14,17-Eicosatrienoic Acid	C20:3n3
Arachidonic Acid	C20:4n6
cis-5,8,11,14,17-Eicosapentaenoic Acid	C20:5n3
Heneicosanoic Acid	C21:0
Behenic Acid	C22:0
Erucic Acid	C22:1n9
cis-13,16-Docosadienoic Acid	C22:2
cis-4,7,10,13,16,19-Docosahexaenoic Acid	C22:6n3
Tricosanoic Acid	C23:0
Lignoceric Acid	C24:0

¹ pulverized/crushed (deep-frozen) in 1.5 mL safe-lock Eppendorf tube; note exact weight in iLab

² required cell number largely depends on cell size (e.g. 6 Mio. for HELA or HEK cells; 10 Mio. for T-cells)