

Metabolite Profiling Facility

Free Fatty Acids Analysis

Brief Description:

Free fatty acids can be detected and quantified in biological samples such as plasma, cells, or tissues. The samples may be saponified or hydrolyzed to look at total fatty acid content or extracted with organic solvent and the “free” fatty acid species evaluated. 3-acyloxymethyl-1-methylpyridinium iodide (AMMP) derivatives are made of each species prior to analysis to aid in ionization and selection. Quantitation of each analyte is based upon stable isotope dilution technique. The prepared samples are separated on a Waters Xbridge C18 phase HPLC column and detected using our Agilent 6460 triple quadrupole mass spectrometer in MRM mode. The run time is approximately 16 minutes per sample. Data are collected in positive electrospray ionization modes. Data are typically normalized to sample volume, weight, or protein content.

Normal Weight: plasma (200-1000 µL); tissue (50-500 mg); cells (~2E6)

Minimal Weight: plasma (200 µL); tissue (10 mg)

Special Handling: Samples should remain frozen at -80°C and in darkness prior to analysis if possible

References:

1. Yang W-C, Adamec JA, Regnier FE. 2007. Enhancement of the LC/MS analysis of fatty acids through derivatization and stable isotope coding. Anal. Chem. 79: 5150-5157

Table I: Analytes (5) reported. This list of analytes may be edited on request.

Compound Name	Compound Group	
linoleic-d3	18:2-d3	internal standard
linoleic	18:2	analyte
oleic-d3	18:1-d3	internal standard
oleic	18:1	analyte
palmitic-d3	16:0-d3	internal standard
palmitic	16:0	analyte
palmitoleic-d3	16:1-d3	internal standard
palmitoleic	16:1	analyte
stearic-d3	18:0-d3	internal standard
stearic	18:0	analyte