PURDUE UNIVERSITY Discovery Park

Bindley Bioscience Center

Metabolite Profiling Facility

Short Chain Fatty Acids (C2, C3, C4)

Brief Description:
Short chain fatty acids (C2, C3, C4) can be detected and quantified in biological samples such as plasma/serum, cells, tissues, or feces. Aniline derivatives are made of each species prior to analysis to aid in reverse phase retention and selection. Quantitation of each analyte is based upon GSIST technique (ref 1, 2). The prepared samples are separated on an Agilent CN phase HPLC column and detected using our Agilent 6460 triple quadrupole mass spectrometer in MRM mode. The run time is approximately 40 minutes per sample. Data are collected in positive electrospray ionization modes. Data are typically normalized to sample volume or weight.

Normal Weight: plasma (50-200 µL); tissue/feces (10-100 mg); cells (~2E6)

Minimal Weight: plasma (50 µL); tissue (10 mg); feces (10 mg)

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

References:

1. Yang W-C, Sedlak M, Regnier FE, Mosier N, Ho N, and Adamec JA. 2008. Simultaneous quantification of metabolites involved in central carbon and energy metabolism using reversed-phase liquid chromatography-mass spectrometry and in vitro 13C labeling. Anal. Chem. 80: 9508-9516
2. Park J, Kim M, Kang SG, Jannasch AH, Cooper B, Patterson J, Kim CH. 2015. Short-chain fatty acids induce both effector and regulatory T cells by suppression of histone deacetylases and regulation of the mTOR-S6K pathway. Mucosal Immunol. 8 (1): 80-93.

Table I: Analytes (3) reported-C2, C3, C4. This list of analytes may be edited on request.

Compound Group	Compound Name	
C2	acetic	analyte
C2	acetic-13C	internal standard
C3	propionic	analyte
C3	propionic-13C	internal standard
C4	butyric	analyte
C4	butyric -13C	internal standard
C4	crotonic-12C	internal standard
C4	crotonic-13C	internal standard

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