Metabolite Profiling Facility

Nucleoside Triphosphate Analysis

Brief Description:

Nucleoside triphosphates AMP, ADP, ATP, GMP, GDP, GTP can be detected and quantified in biological samples such as plasma/serum, cells, or tissues. 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 Water's T3 phase HPLC column and detected using our Agilent 6460 triple quadrupole mass spectrometer in MRM mode. The run time is approximately 20 minutes per sample. Data are collected in negative 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 (6) reported-AMP, ADP, ATP, GMP, GDP, and GTP. This list of analytes may be edited on request.

Compound Name	
AMP	analyte
AMP-$^{13}C_6$	internal standard
GMP	analyte
GMP-$^{13}C_6$	internal standard
ADP	analyte
ADP-$^{13}C_6$	internal standard
GDP	analyte
GDP-$^{13}C_6$	internal standard
ATP	analyte
ATP-$^{13}C_6$	internal standard
GTP	analyte
GTP-$^{13}C_6$	internal standard