Metabolomics Core Technology Platform

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ANALYSIS OF AMINO ACIDS

Description: UPLC-Fluorescence (FLR) method for the sensitive detection and quantification of amino acids. Detection limits depend on matrix type and input quantity. Samples are extracted using 0.1M HCl, semi-purified, derivatized using AccqTag® (Waters) and measured by UPLC-FLR using norleucine as an internal standard for normalization.

Analytes are reported as µM or pmol/mio cells or pmol/mg tissue.

Container: Eppendorf Tube or equivalent

Optimal Volume: Plasma / cell culture medium (100 µl); Tissue (25 mg)[1]; Cells (1 mio).

Minimal Volume: Plasma / cell culture medium (25 µL); Tissue (10 mg)[1]; Cells (0.5 mio).

Sample Collection: Please see our detailed sample collection protocols.

Quantification: Absolute, using external calibration and internal std norleucine.

Please note: For human material, note any known presence of infectious agents

List of reported compounds
(D- and L- enantiomers are not distinguished; for determination of Cys or Trp, see specific methods)

Compound name	Identifier	Formula	Monoisotopic mass
Alanine	HMDB0000161	$C_3H_7NO_2$	89.048
Arginine	HMDB0000517	$C_6H_{14}N_4O_2$	174.112
Asparagine	HMDB0000168	$C_4H_8N_2O_3$	132.053
Aspartic Acid	HMDB0000191	$C_4H_7NO_4$	133.038
Glutamine	HMDB0000641	$C_5H_{10}N_2O_3$	146.069
Glutamic Acid	HMDB0000148	$C_5H_9NO_4$	147.053
Glycine	HMDB0000123	$C_2H_5NO_2$	75.032
Histidine	HMDB0000177	$C_6H_9N_3O_2$	155.069
Isoleucine	HMDB0000172	$C_6H_{13}NO_2$	131.095
Leucine	HMDB0000687	$C_6H_{13}NO_2$	131.095
Lysine	HMDB0000182	$C_6H_{14}N_2O_2$	146.106

[1] Pulverized/crushed (deep-frozen) and exact weight noted

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Methionine	HMDB0000696	$C_5H_{11}NO_2S$	149.051
Phenylalanine	HMDB0000159	$C_9H_{11}NO_2$	165.079
Proline	HMDB0000162	$C_5H_9NO_2$	115.063
Serine	HMDB0000187	$C_3H_7NO_3$	105.043
Threonine	HMDB0000167	$C_4H_9NO_3$	119.058
Tyrosine	HMDB0000158	$C_9H_{11}NO_3$	181.0734
Valine	HMDB0000883	$C_5H_{11}NO_2$	117.079

LC conditions

Column	Waters BEH C18 150 x 2.1mm
Temperature	42° C
Mobile phase A	140 mM Na-Acetate, 7 mM Triethanolamine, pH 6.3
Mobile phase B	ACN
Flow	0.45 ml/min

Notes

Samples need to be snap-frozen and stored at -80°C.

Variations in sampling procedures will affect metabolite measurements.

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