

# MassChrom<sup>®</sup> Amino Acids and Acylcarnitines from Dried Blood/Non Derivatized with 96 Well Plates

CE0123  
certified!

## LC-MS/MS Assay with Succinylacetone Upgrade Set

- > Each analyte safeguarded by its own internal standard
- > Screening of many metabolic disorders in a single run such as PKU, MSUD and tyrosinemia type I

Amino Acids and Succinylacetone	Internal Standard
Alanine	Alanine-D4
Arginine	Arginine-D7
Aspartic acid	Aspartic acid-D3
Citrulline	Citrulline-D2
Glutamic acid	Glutamic acid-D5
Glycine	Glycine- <sup>13</sup> C <sub>2</sub> - <sup>15</sup> N
Leucine	Leucine-D3
Methionine	Methionine-D3
Ornithine	Ornithine-D6
Phenylalanine	Phenylalanine-D5
Proline	Proline-D7
Tyrosine	Tyrosine-D4
Valine	Valine-D8
Succinylacetone	Succinylacetone- <sup>13</sup> C <sub>5</sub>

Acylcarnitines and free Carnitine	Internal Standard
Free Carnitine	Carnitine-D9
C2-Carnitine	C2-Carnitine-D3
C3-Carnitine	C3-Carnitine-D3
C4-Carnitine	C4-Carnitine-D3
C5-Carnitine	C5-Carnitine-D9
C5DC-Carnitine	C5DC-Carnitine-D6
C6-Carnitine	C6-Carnitine-D3
C8-Carnitine	C8-Carnitine-D3
C10-Carnitine	C10-Carnitine-D3
C12-Carnitine	C12-Carnitine-D3
C14-Carnitine	C14-Carnitine-D3
C16-Carnitine	C16-Carnitine-D3
C18-Carnitine	C18-Carnitine-D3

### Specifications

Limit of quantification	
Amino acids with SUAC:	0.31 – 12.8 µmol/l
Acylcarnitines:	0.029 – 0.475 µmol/l
Linearity	
Amino acids with SUAC:	120 – 7000 µmol/l
Acylcarnitines:	13.5 – 400 µmol/l
Recovery	
Amino acids with SUAC:	87 – 110 %
Acylcarnitines:	88 – 114 %
Intraassay	
Amino acids with SUAC:	CV = 2.7 – 13.4 %
Acylcarnitines:	CV = 3.1 – 12.1 %
Interassay	
Amino acids with SUAC:	CV = 3.5 – 14.7 %
Acylcarnitines:	CV = 3.8 – 12.6 %
Analysis time:	< 2 min
Cutoff thresholds	
Amino acids:	51.1 – 742 µmol/l
Free carnitine:	55.4 µmol/l
Acylcarnitines:	0.24 – 66.7 µmol/l
SUAC:	1.23 µmol/l

### Pre-analytic Treatment

Specimen collection: whole blood from the heel of the newborn taken onto a filter card. Collection between 24th and 72nd hour of life depending on individual national guideline. Stability: storage at low humidity (< 30 %) and ambient temperature is sufficient if analysis is performed within 24 to 48 hours. For longer storage deep-freeze samples with humidity excluded below -18 °C.

### Sample Preparation

- > Punch out 3.2 mm blood spots from the filter cards into a 96 Well Plate.
- > Add 100 µl Internal Standard and agitate for 20 min.
- > Transfer supernatant into a new 96 Well Plate.
- > Inject up to 10 µl into the LC-MS/MS system.

The sample preparation for the analysis of succinylacetone differs from this. Please refer to the instruction manual.

### MS Parameters

For newborn screening any LC-MS/MS system with sufficient sensitivity is suitable. No analytical column is required.

Injection volume: ≤ 10 µl  
Flow gradient: 20 – 600 µl/min  
MS/MS Mode: MRM

These Chromsystems assays allow the fast and reliable determination of amino acids, acylcarnitines and succinylacetone from dried blood spot samples as part of the newborn screening for amino acid and fatty acid metabolic disorders using tandem mass spectrometry. Sample preparation is based on effective extraction of the analytes from the blood spot without any further sample preparation steps required. The use of stable isotope labelled internal standards for calibration and measurement ensures reliable and precise quantification of the analytes. Compared with the derivatised method (55000 or 55000/F), this method is characterised by a more efficient sample preparation.

## Ordering Information

These products are not available in all countries

Order no.	Product
57000	<b>MassChrom</b> <sup>®</sup> Amino Acids and Acylcarnitines from Dried Blood/Non Derivatised For 960 determinations using 96 Well Plates
57111	Succinylacetone Upgrade Set for 960 determinations, consisting of Internal Standard, Extraction Buffer, Protective Sheets and Pierceable Heat Seals
<b>Components available separately</b>	
57001	Mobile Phase, 1000 ml
57002	Mobile Phase, 10 x 1000 ml
57004	Internal Standard (lyoph.), 4 x 25 ml
57044	Internal Standard, Succinylacetone (non derivatised), 4 x 18 ml
57007	Rinsing Solution, 1000 ml
57008	Extraction Buffer, 100 ml
57012	Extraction Buffer, Succinylacetone (non derivatised), 4 x 18 ml
57010	96 Well Plates, 5 pcs.
55011	Protective Sheets for 96 Well Plates, 10 pcs.
57014	Pierceable Heat Seals for 96 Well Plates, 6 pcs.
<b>Startup Accessories</b>	
55015	Restrictor Capillary, 1 pc.
57099	Tuning Mix, Analytes and Internal Standards, 2 ml
57098	Tuning Mix, Succinylacetone (non derivatised), Analyte and Internal Standard, 1 ml
55033	PEEK Prefilter, 2 µm, 5 pcs.
15010	PEEK Prefilter Housing, 1 pc.
<b>Chromsystems MassCheck<sup>®</sup> Controls</b>	
	<b>MassCheck</b> <sup>®</sup> Amino Acids, Acylcarnitines and Succinylacetone Dried Blood Spot Controls
0191	Bi-Level (I + II), 2 x 3 spots
0192	Level I, 1 x 3 spots
0193	Level II, 1 x 3 spots