

# APPLICATIONS



## LC/MS/MS Analysis of Underivitized Methylmalonic Acid (MMA) and Succinic Acid in Plasma Using Strata<sup>®</sup>-X-AW and Luna<sup>®</sup> Omega 1.6 μm PS C18

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### Overview

The following sample preparation method utilizes the weak anion-exchange mechanism of Strata-X-AW to produce a clean extract of blood plasma while selectively recovering MMA. Using the mixed-mode stationary phase of the Luna Omega 1.6 μm PS C18 column, we are able to retain underivitized MMA and resolve it from succinic acid, an isomeric interference. High efficiency Luna Omega particles provide good sensitivity for analysis of MMA.

### Experimental Conditions

#### Solid Phase Extraction (SPE)

**Cartridge:** Strata-X-AW, 30 mg/1 mL  
**Part No.:** 8B-S038-TAK  
**Pretreatment:** Dilute 100 μL plasma with 0.5 mL 0.1% acetic acid and 50 μL internal standard  
**Condition:** 1 mL Methanol  
**Equilibrate:** 1 mL 0.1% Acetic acid in Water  
**Load:** Full pretreated sample  
**Wash:** 0.5 mL Methanol/Water (50:50)  
**Dry:** 5-10 min under high vacuum  
**Elute:** 2 x 0.6 mL 2% Ammonium hydroxide in Methanol  
**Evaporate:** To dryness @ 45-50 °C under a gentle nitrogen stream  
**Reconstitute:** 200 μL Mobile Phase A (0.1% formic acid in water)

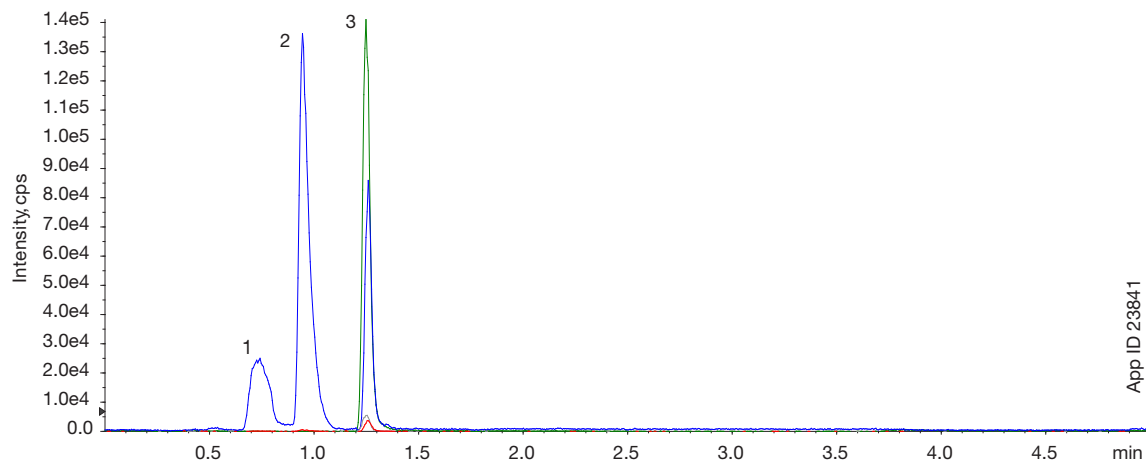
#### LC/MS/MS Conditions

**Column:** Luna Omega 1.6 μm PS C18  
**Dimension:** 50 x 2.1 mm  
**Part No.:** 00B-4752-AN  
**Mobile Phase:** A: 0.1% Formic Acid in Water  
 B: 0.1% Formic Acid in Acetonitrile  

Gradient: Time (min)	% B
0	2
2	90
3	90
3.01	2
5	2

**Flow Rate:** 0.4 mL/min  
**Temperature:** 40 °C  
**Inject:** 10 μL  
**Detection:** MS/MS (SCIEX 4000 QTRAP<sup>®</sup>) (600 °C)  
**Sample:** 1. Interference  
 2. Succinic Acid  
 3. MMA

### Representative Chromatogram of MMA and Succinic Acid in Plasma



App ID 23841



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## Luna<sup>®</sup> Omega Ordering Information

1.6 µm Minibore Columns (mm)					SecurityGuard <sup>™</sup> ULTRA Cartridges <sup>‡</sup>
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	3/pk
<b>PS C18</b>	00A-4752-AN	00B-4752-AN	00D-4752-AN	00F-4752-AN	AJO-9508 for 2.1 mm ID

\*SecurityGuard ULTRA Cartridges require holder, Part No.: AJO-9000

5 µm Minibore Columns (mm)					SecurityGuard Cartridges (mm)
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	4 x 2.0* /10pk
<b>PS C18</b>	00A-4753-AN	00B-4753-AN	00D-4753-AN	00F-4753-AN	AJO-7605 for ID: 2.0 - 3.0 mm

\*SecurityGuard Analytical Cartridges require holder, Part No.: KJO-4282

## Strata<sup>®</sup>-X-AW Ordering Information

Sorbent Mass	Part Number	Unit
<b>Tube</b>		
30 mg	8B-S038-TAK	1 mL (100/box)
30 mg	8B-S038-TBJ	3 mL (50/box)
60 mg	8B-S038-UBJ	3 mL (50/box)
100 mg	8B-S038-EBJ	3 mL (50/box)
100 mg	8B-S038-ECH	6 mL (30/box)
200 mg	8B-S038-FBJ	3 mL (50/box)
200 mg	8B-S038-FCH	6 mL (30/box)
500 mg	8B-S038-HBJ	3 mL (50/box)
500 mg	8B-S038-HCH	6 mL (30/box)
<b>Giga<sup>™</sup> Tube</b>		
500 mg	8B-S038-HDG	12 mL (20/box)
1 g	8B-S038-JDG	12 mL (20/box)
1 g	8B-S038-JEG	20 mL (20/box)
2 g	8B-S038-KEG	20 mL (20/box)
5 g	8B-S038-LFF	60 mL (16/box)
<b>96-Well Plate</b>		
10 mg	8E-S038-AGB	2 Plates/Box
30 mg	8E-S038-TGB	2 Plates/Box
60 mg	8E-S038-UGB	2 Plates/Box
<b>96-Well Microelution Plate</b>		
2 mg	8M-S123-4GA	ea

Additional sizes available. Contact your Phenomenex Sample Preparation Specialist for additional information.



If Luna analytical columns do not provide at least an equivalent separation as compared to a competing column of the same particle size, similar phase, and dimensions, return the column with comparative data within 45 days for a FULL REFUND.



If Strata<sup>®</sup> SPE products do not perform as well or better than your current SPE product of similar phase, mass and size, return the product with comparative data within 45 days for a FULL REFUND.

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SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362

**CAUTION:** this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP or ULTRA holders, or to any cartridges.

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