

APPLICATION



Determination of Pantothenic Acid (Vitamin B₅) in Human Serum by LC-MS/MS using a Luna[®] Omega Polar C18 column

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Overview

Most pantothenic acid (vitamin B₅) is in the form of CoA or acyl carrier protein (ACP) in food. For the intestinal cells to absorb this vitamin, it must be converted into free pantothenic acid in the body. Since pantothenic acid plays such a wide array of key biological roles, it is considered an essential nutrient. In this application note, we describe a simplified extraction method of Vitamin B₅ from human serum followed by an LC-MS/MS method using a Luna Omega 3 μm Polar C18 column. The Luna Omega Polar C18 column provided excellent retention, sensitivity, and peak shape for pantothenic acid because of its dual polar/non-polar selectivity and advanced thermally modified silica particles.

Mass Transitions:

ID	Q1	Q3	Dwell (msec)	CE	DP
Pantothenic Acid 1	220.1	90.1	100	19	100
Pantothenic Acid 2	220.1	184.1	100	20	100

Sample Extraction Procedure

1. Aliquot 50 μL of human serum to 1.8 mL amber microcentrifuge tube, add 1 mL DI water, mix
2. Add 20 μL of 70% HClO₄ to sample and mix well, centrifuge at 13,500 rpm for 10 min
3. Take 200 μL supernatant into amber autosampler vial
4. Inject 5 μL on the system

LC-MS/MS Analysis

Column: Luna Omega 3 μm Polar C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4760-AN
Mobile Phase: A. 10 mM Ammonium Formate with 0.1 % Formic Acid
 B. 10 mM Ammonium Formate in Methanol with 0.1 % Formic Acid

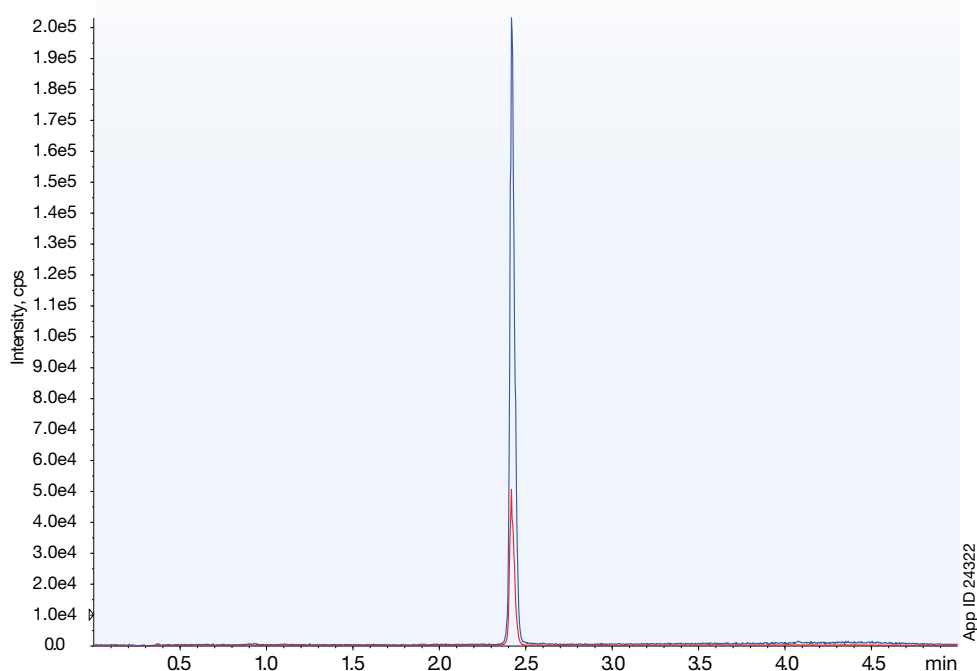
Gradient	Time (min)	B (%)
	0.01	0
	0.6	0
	3.0	90
	3.5	90
	3.6	0
	5.0	0

Temperature: Ambient
Flow Rate: 0.5 mL/min
Pressure: 150 bar
Injection Volume: 5 μL
Detector: SCIEX API 5000™ (ESI+)
Sample: Pantothenic Acid

ESI Source Parameters:

CUR: 25
CAD: 6
TEM: 650
GS1: 50
GS2: 50
IS: 4000
EP: 10
CXP: 13

Pantothenic Acid (Vitamin B₅) Extracted from Human Serum



APPLICATION

Luna[®] Omega Ordering Information

5 µm Minibore and MidBore™ Columns (mm)								SecurityGuard™ Cartridges (mm)
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0*
Polar C18	00A-4754-AN	00B-4754-AN	00D-4754-AN	00F-4754-AN	00B-4754-YO	00D-4754-YO	00F-4754-YO	AJO-7600 for ID: 2.0 - 3.0 mm

5 µm Analytical Columns (mm)					SecurityGuard Cartridges (mm)
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*
Polar C18	00B-4754-E0	00D-4754-E0	00F-4754-E0	00G-4754-E0	AJO-7601 for ID: 3.2-8.0 mm

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3 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*
Polar C18	00A-4760-AN	00B-4760-AN	00D-4760-AN	00F-4760-AN	AJO-7600 for ID: 2.0-3.0 mm

3 µm MidBore Columns (mm)				SecurityGuard Cartridges (mm)
Phases	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0*
Polar C18	00B-4760-YO	00D-4760-YO	00F-4760-YO	AJO-7600 for ID: 2.0-3.0 mm

3 µm Analytical Columns (mm)					SecurityGuard Cartridges (mm)
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*
Polar C18	00B-4760-E0	00D-4760-E0	00F-4760-E0	00G-4760-E0	AJO-7601 for ID: 3.2-8.0 mm

1.6 µm Microbore Columns (mm)			
Phases	50 x 1.0	100 x 1.0	150 x 1.0
Polar C18	00B-4748-A0	00D-4748-A0	00F-4748-A0

1.6 µm Minibore Columns (mm)					SecurityGuard ULTRA Cartridges [‡]
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	3/pk
Polar C18	00A-4748-AN	00B-4748-AN	00D-4748-AN	00F-4748-AN	AJO-9505 for ID: 2.1 mm

* SecurityGuard ULTRA Cartridges require holder, Part No.: AJO-9000
* SecurityGuard Analytical Cartridges require holder, Part No.: KJO-4282



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.

Terms and Conditions

Subject to Phenomenex Standard Terms and Conditions, which may be viewed at <http://www.phenomenex.com/TermsAndConditions>.

Trademarks

MidBore and SecurityGuard are trademarks and Luna is a registered trademark of Phenomenex. API 5000 is a trademark of AB SCIEX Pte. Ltd. AB SCIEX™ is being used under license.

Disclaimer

For RESEARCH USE ONLY. Not for use in diagnostic procedures.

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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