

APPLICATION

Separation of Vitamin E Congeners by LC/UV using a Kinetex[®] 2.6 μm F5 Core-Shell LC Column

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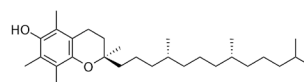
Overview

The analysis of Vitamin E derivatives has become exceedingly important for a number of industries including Food, Beverage, Nutraceutical, Cosmetic, and Clinical Research. In terms of consumption, γ-Tocopherol is the most common form found in the American diet due to soybean and corn oil use, while α-Tocopherol is the foremost form found in supplements and in the European diet because of sunflower and olive oils. As a result, the tocopherols were the most studied in the past, however focus has recently shifted towards understanding the antioxidant and potential health benefits of the tocotrienols. Due to the structural similarities of all the Vitamin E forms, a complete separation requires a column with multiple interaction mechanisms like the Kinetex F5. With its ability to utilize five distinct separation mechanisms (hydrophobic, aromatic, electrostatic, steric/planar, and hydrogen bonding) the Kinetex 2.6 μm F5 core-shell column easily performs this complex separation for both HPLC and UHPLC analysis.

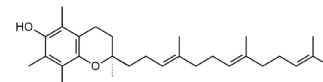
Find more information on Kinetex core-shell HPLC and UHPLC columns at:
www.phenomenex.com/kinetex

Vitamin E Forms

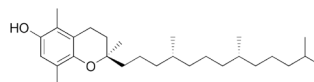
α-Tocopherol



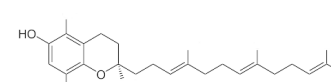
α-Tocotrienol



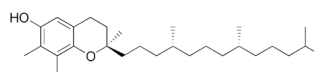
β-Tocopherol



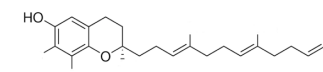
β-Tocotrienol



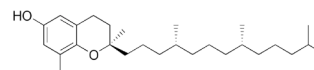
γ-Tocopherol



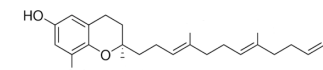
γ-Tocotrienol



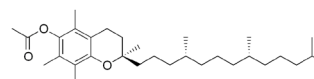
δ-Tocopherol



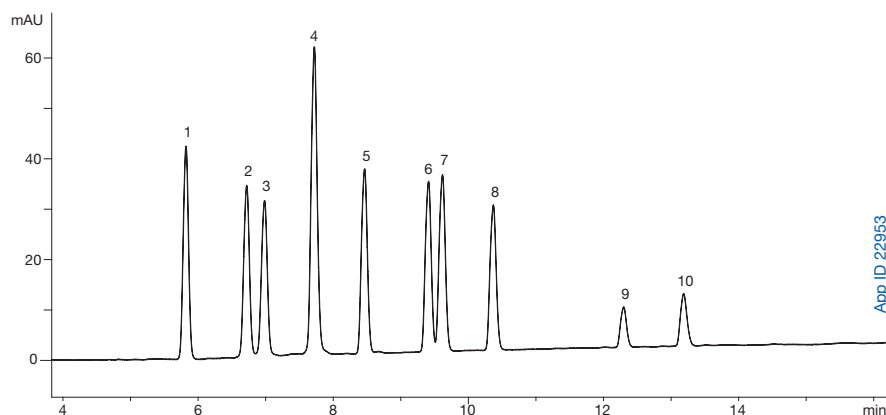
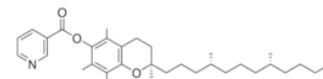
δ-Tocotrienol



Vitamin E Acetate



Tocopherol Nicotinate



LC/UV Conditions

Column: Kinetex 2.6 μm F5
Dimensions: 150 x 4.6 mm
Part No.: 00F-4723-E0
Mobile Phase: A: Water
 B: Methanol

Gradient	Time (min)	% B
	0	85
	1	85
	15	100
	17	100
	18	85
	23	85

Flow Rate: 1.2 mL/min

Temperature: 42 °C

Detection: UV @ 290 nm

Sample:

1. Delta Tocotrienol	6. Beta Tocopherol
2. Beta Tocotrienol	7. Gamma Tocopherol
3. Gamma Tocotrienol	8. Alpha Tocopherol
4. Alpha Tocotrienol	9. Vitamin E Acetate
5. Delta Tocopherol	10. Tocopherol Nicotinate



APPLICATION

Kinetex® Ordering Information

2.6 µm Minibore Columns (mm)

Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	3/pk
F5	00A-4723-AN	00B-4723-AN	00D-4723-AN	00F-4723-AN	AJO-9322 for 2.1 mm ID

**SecurityGuard™
ULTRA
Cartridges†**

**SecurityGuard
ULTRA
Cartridges†**
for 3.0 mm ID

2.6 µm MidBore™ Columns (mm)

Phases	50 x 3.0	100 x 3.0	150 x 3.0	3/pk
F5	00B-4723-YO	00D-4723-YO	00F-4723-YO	AJO-9321 for 3.0 mm ID

**SecurityGuard
ULTRA
Cartridges†**
for 4.6 mm ID

2.6 µm Analytical Columns (mm)

Phases	50 x 4.6	100 x 4.6	150 x 4.6	3/pk
F5	00B-4723-E0	00D-4723-E0	00F-4723-E0	AJO-9320 for 4.6 mm ID

**SecurityGuard
ULTRA
Cartridges†**
for 2.1 mm ID

1.7 µm Minibore Columns (mm)

Phases	50 x 2.1	100 x 2.1	150 x 2.1	3/pk
F5	00B-4722-AN	00D-4722-AN	00F-4722-AN	AJO-9322 for 2.1 mm ID

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

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Phenomenex products are available worldwide. For the distributor in your country, contact Phenomenex USA, International Department at international@phenomenex.com



If Phenomenex products in this technical note do not provide at least an equivalent separation as compared to other products of the same phase and dimensions, return the product 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

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