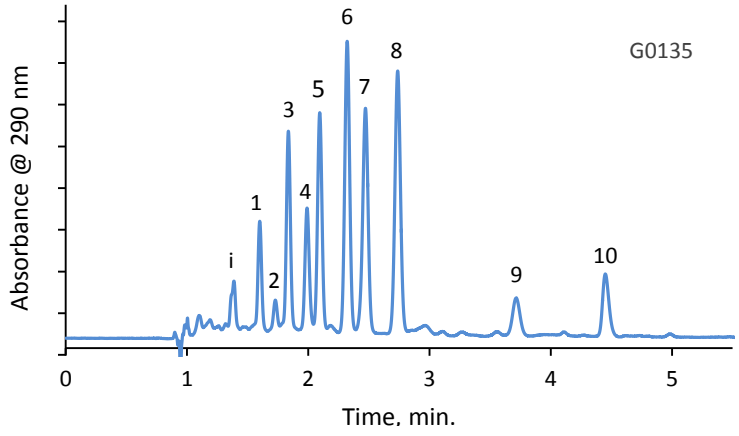
Application Note: 146-V

Rapid Separation of Vitamin E Congeners on HALO PFP



PEAK IDENTITIES:

1. δ-Tocotrienol
2. β-Tocotrienol
3. γ-Tocotrienol
4. α-Tocotrienol
5. δ-Tocopherol
6. β-Tocopherol
7. γ-Tocopherol
8. α-Tocopherol
9. α-Tocopherol acetate
10. α-Tocopherol nicotinate

i = impurity

TEST CONDITIONS:

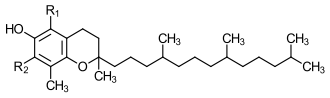
Column: HALO PFP, 4.6 x 150 mm, 2.7 µm
Part Number: 92814-709
A= Water
B= Methanol
Gradient:

Time (min.)	%B
0.00	92
2.75	92
3.00	95
5.00	95

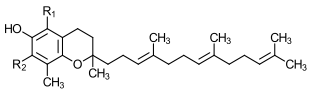
Flow Rate: 1.5 mL/min.
Pressure: 380 bar
Temperature: 25 °C
Injection Volume: 5 µL
Sample Solvent: Ethanol
Detection: UV 290 nm, PDA
Data Rate: 40 Hz
Response Time: 0.05 sec.
Flow Cell: 1 µL
LC System: Shimadzu Nexera X2

STRUCTURES:

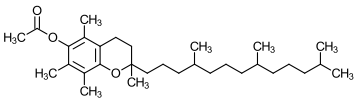
Tocopherol/Tocotrienol	R_1	R_2
Alpha (α)	CH_3	CH_3
Beta (β)	CH_3	H
Gamma (γ)	H	CH_3
Delta (δ)	H	H



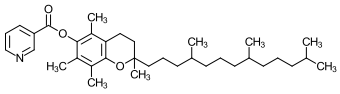
Tocopherol



Tocotrienol



α-Tocopherol acetate



α-Tocopherol nicotinate

Vitamin E capsules can contain up to eight related, but different constituents, including up to four tocopherols and four tocotrienols. Ester derivatives of Vitamin E are made to increase the stability of the compound. Vitamin E is important for its antioxidant properties in both the body and in food and cosmetics.
The sample used for analysis was combination of standards and a vitamin supplement purchased locally. The soft gel vitamin supplement contained the four tocotrienols and α-tocopherol. Only the liquid in the soft gel was used for the analysis. The four tocopherols, α-tocopherol acetate, and α-tocopherol nicotinate were standards obtained from Sigma-Aldrich. The small, unidentified peaks are unknown materials from the soft gel capsule.

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