

Application Note: 183-V

### Carotenoids Extracted from Carrot Juice Analyzed using HALO® C30





Application Note: 180-V

### Vitamin K1 Isomer Analysis on HALO® C30



Vitamin K1: 2,3-trans-phylloquinone

Vitamin K1: cis-phylloguinone

Vitamin K, a fat-soluble vitamin, is beneficial for blood clotting and bone health. Vitamin K1 is produced from plants and can be found in high amounts in green vegetables. Vitamin K1 can also be converted into K2 within the body, while K3 is a synthetic form of vitamin K. The *cis* form of K1 is bio inactive so it is important to monitor how much is present in vitamin supplements. Baseline resolution of K1 isomers is obtained on a HALO<sup>®</sup> C30 column compared to a coelution on a competitor SPP C30 column.

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LC System: Shimadzu Nexera X2

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Application Note: 184-STR



#### **TEST CONDITIONS:**

Column: HALO 160Å C30, 2.7 µm, 4.6 x 150mm Part Number: 92114-730 Mobile Phase A: Water Mobile Phase B: 50/50 Acetonitrile/ Methanol Isocratic: 50% B Flow Rate: 1.5 mL/min Pressure: 355 bar Temperature: 50°C Detection: UV 220 nm, PDA Injection Volume: 0.5 µL Sample Solvent: Acetonitrile Data Rate: 40 Hz Response Time: 0.025 sec Flow Cell: 1 µL LC System: Shimadzu Nexera X2

#### **PEAK IDENTITIES:**

1. Prednisone

2.

- 4. Hydrocortisone
- Cortisone 3. Prednisolone
- Dexamethasone 5.
- 6. Corticosterone

#### **STRUCTURES:**



Prednisone



Cortisone



OH

Prednisolone

Glucocorticoids are a class of steroid drugs that have anti-inflammatory and anti-allergy benefits, as well as antilymphatic cancer uses. This mixture of six glucocorticoids is separated with high resolution in less than four minutes on a HALO C30 column.



Hydrocortisone







Corticosterone

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Application Note: 185-V



Tocopherols are a form of vitamin E (fat-soluble) that have antioxidant properties in both the body and in food. They are also used for cosmetics and many personal care products. Here, tocopherols are separated on a 160 Å pore size HALO® C30 column with baseline resolution between the beta and gamma isomers compared to a 90 Å HALO<sup>®</sup> C18 column. While the HALO<sup>®</sup> C18 has more surface area  $(135 \text{ m}^2/\text{g vs. } 90 \text{ m}^2/\text{g})$  and exhibits twice the retention, it produces a coelution of the isomers. Due to the C30's shape selectivity, complete separation of the isomers is achieved.



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Application Note: 182-V



#### **TEST CONDITIONS:**

Column: HALO 160 Å C30, 2.7 μm, 4.6 x 150 mm Part Number: 92114-730 Isocratic: 100% Methanol Flow Rate: 1.5 mL/min Pressure: 262 bar Temperature: 30°C Detection: UV 280 nm, PDA Injection Volume: 2.0 μL Sample Solvent: Methanol Data Rate: 40 Hz Response Time: 0.025 sec. Flow Cell: 1 μL LC System: Shimadzu Nexera X2

#### PEAK IDENTITIES:

- 1. Retinyl acetate (A)
- 2. Delta tocopherol (E)
- 3. Ergocalciferol (D2)
- 4. Cholecalciferol (D3)
- 5. Alpha tocopherol (E)
- 6. DL-alpha-tocopherol acetate (E)
- 7. 2,3-*trans*-phylloquinone (K)
- 8. Retinyl palmitate (A)

#### **CONCENTRATION:**

0.15 mg/mL 0.08 mg/mL 0.08 mg/mL 0.08 mg/mL 0.08 mg/mL 0.08 mg/mL 0.31 mg/mL 0.15 mg/mL

Fat soluble vitamins are stored in the liver and fatty tissue. These vitamins are essential to good health and contribute to several physiological functions, including bone growth, immune system regulation, cell division, and blood clotting. Vitamin E acts as an antioxidant. HALO<sup>®</sup> C30 enables a fast, efficient separation of a typical fat soluble vitamin panel in less than 9 minutes, while maintaining baseline resolution between vitamins D2 and D3.



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# HALO: | Fused-Core® Particle Technology

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### Fat Soluble Vitamin Structures



Retinyl acetate (A)



Delta tocopherol (E)



Ergocalciferol (D2)



Cholecalciferol (D3)



Alpha tocopherol (E)



DL-alpha-tocopherol acetate (E)



2,3-trans-phylloquinone (K)



Retinyl palmitate (A)

