

Application Report 287

Analysis of Phenolic Antioxidants Using Ascentis™ C18

Antioxidants are compounds that are added to food and other products to prevent rancidity. The suitability of the Ascentis C18 for the separation of the nine phenolic antioxidants listed in AOAC Official Method 983.15 (used to monitor antioxidants in oils, fats, and butter oil) is demonstrated. The structures along with the optimized chromatogram obtained on the Ascentis C18 are presented.

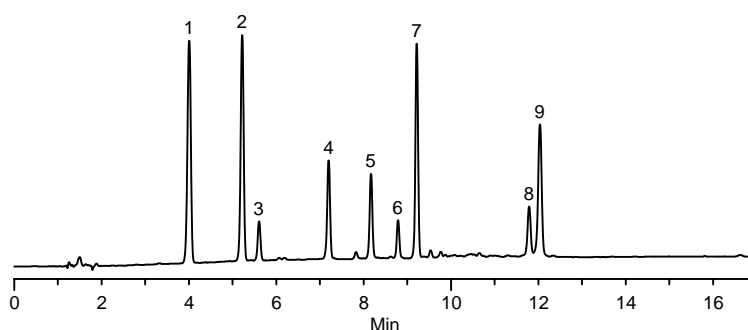
Key Words

tert-butylhydroquinone, TBHQ, 19986, 1948-33-0, 2- & 3-tert-butyl-4-hydroxyanisole, BHA, B1253, 25013-16-5, 2,6-di-tert-butyl-4-hydroxymethylphenol, Ionox 100, 446424, 88-26-6, 3,5-di-tert-butyl-4-hydroxytoluene, BHT, 34750, 128-37-0, lauryl gallate, dodecyl gallate, 48660, 1166-52-5, nordihydroguaiaretic acid, NDGA, 74540, 500-38-9, octyl gallate, 48700, 1034-01-1, propyl gallate, 48710, 121-79-9, 2,4,5-trihydroxybutyrophenone, THBP, S370932, 1421-63-2, phenolic antioxidant, Ascentis C18, 581325-U

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Acquisition System: "Pikes Peak"
(Thermo Instrument)

Notebook Reference: 1562-58



G003122

Conditions

column: Ascentis C18, 25 cm x 4.6 mm I.D., 5 µm particles (581325-U)
mobile phase A: 5% acetic acid in DI water
mobile phase B: 50:50 methanol:acetonitrile
flow rate: 2.0 mL/min.
temp.: 30 °C
det.: UV at 280 nm
injection: 10 µL
sample: as indicated in 50:50 acetonitrile:2-propanol
gradient:

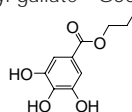
Min	%A	%B
0	70	30
8.6	10	90
17	0	100

Peak IDs

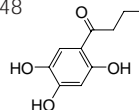
1. Propyl gallate (10 µg/mL)
2. 2,4,5-trihydroxybutyrophenone (10 µg/mL)
3. tert-butylhydroquinone (10 µg/mL)
4. Nordihydroguaiaretic acid (10 µg/mL)
5. 3-tert-butyl-4-hydroxyanisole (10 µg/mL)
6. 2,6-di-tert-butyl-4-hydroxymethylphenol (10 µg/mL)
7. Octyl gallate (10 µg/mL)
8. 3,5-di-tert-butyl-4-hydroxytoluene (10 µg/mL)
9. Lauryl gallate (10 µg/mL)

Structures

Propyl gallate - G003051



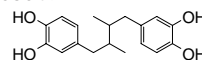
2,4,5-trihydroxybutyrophenone - G003048



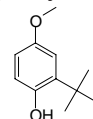
tert-butylhydroquinone - G003044



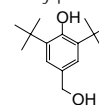
Nordihydroguaiaretic acid - G003049



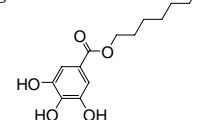
3-tert-butyl-4-hydroxyanisole - G003045



2,6-di-tert-butyl-4-hydroxymethylphenol - G003046



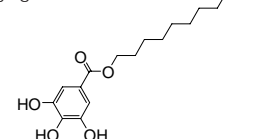
Octyl gallate - G003052



3,5-di-tert-butyl-4-hydroxytoluene - G003047



Lauryl gallate - G003053



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