

Application Report 283

Analysis of Phenolic Antioxidants Using Ascentis™ C8

Antioxidants are compounds that are added to food and other products to prevent rancidity. The suitability of the Ascentis C8 for the separation of ten phenolic antioxidants is demonstrated. Analytes include the nine analytes listed in AOAC Official Method 983.15 (used to monitor antioxidants in oils, fats, and butter oil) plus ethoxyquin (an antioxidant commonly used in spices and cosmetics). The structures along with the optimized chromatogram obtained on the Ascentis C8 are presented.

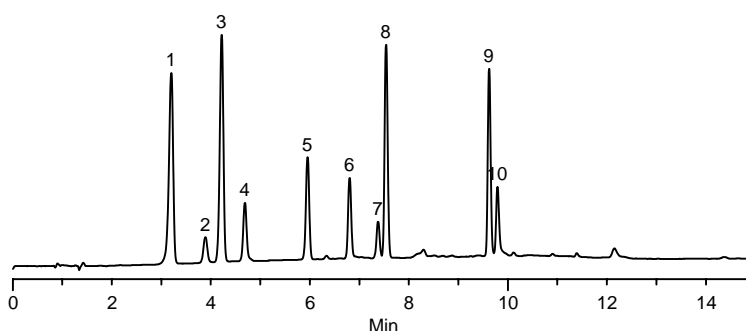
Key Words

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, ethoxyquin, 02810, 91-53-2, phenolic antioxidant, Ascentis C8, 581424-U

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Acquisition System: "Pikes Peak"
(Thermo Instrument)

Notebook Reference: 1562-58



G003054

Conditions

column: Ascentis C8, 15 cm x 4.6 mm I.D., 5 µm particles (581424-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:

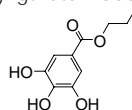
Min	%A	%B
0	70	30
10	0	100
15	0	100

Peak IDs

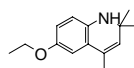
1. Propyl gallate (10 µg/mL)
2. Ethoxyquin (10 µg/mL)
3. 2,4,5-trihydroxybutyrophenone (10 µg/mL)
4. tert-butylhydroquinone (10 µg/mL)
5. Nordihydroguaiaretic acid (10 µg/mL)
6. 3-tert-butyl-4-hydroxyanisole (10 µg/mL)
7. 2,6-di-tert-butyl-4-hydroxymethylphenol (10 µg/mL)
8. Octyl gallate (10 µg/mL)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

Structures

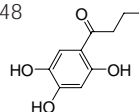
Propyl gallate - G003051



Ethoxyquin - G003050



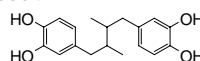
2,4,5-trihydroxybutyrophenone - G003048



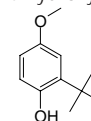
tert-butylhydroquinone - G003044



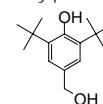
Nordihydroguaiaretic acid - G003049



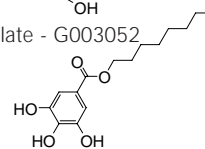
3-tert-butyl-4-hydroxyanisole - G003045



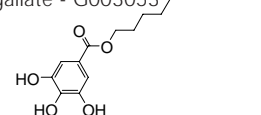
2,6-di-tert-butyl-4-hydroxymethylphenol - G003046



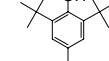
Octyl gallate - G003052



Lauryl gallate - G003053



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



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