

Application Report 288

Analysis of Phenolic Antioxidants Using Ascentis™ RP-Amide

Antioxidants are compounds that are added to food and other products to prevent rancidity. The suitability of the Ascentis RP-Amide 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 RP-Amide are presented.

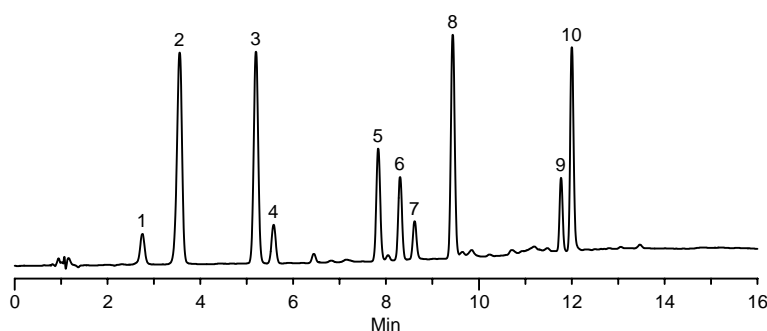
Key Words

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 RP-Amide, 565324-U

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Acquisition System: "Pikes Peak"
(Thermo Instrument)

Notebook Reference: 1562-58



G003123

Conditions

column: Ascentis RP-Amide, 15 cm x 4.6 mm I.D., 5 µm particles (565324-U)
mobile phase A: 5% acetic acid in DI water
mobile phase B: 95:5 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:

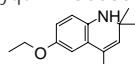
Min	%A	%B
0	65	35
12	5	95
16	5	95

Peak IDs

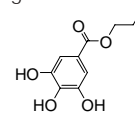
1. Ethoxyquin (10 µg/mL)
2. Propyl gallate (10 µg/mL)
3. 2,4,5-trihydroxybutyrophenone (10 µg/mL)
4. tert-butylhydroquinone (10 µg/mL)
5. Nordihydroguaiaretic acid (10 µg/mL)
6. 3-tert-butyl-4-hydroxyanisole (10 µg/mL)
7. 2,6-di-tert-butyl-4-hydroxymethylphenol (10 µg/mL)
8. Octyl gallate (10 µg/mL)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

Structures

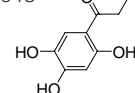
Ethoxyquin - G003050



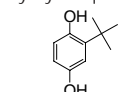
Propyl gallate - G003051



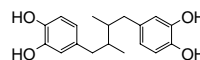
2,4,5-trihydroxybutyrophenone - G003048



tert-butylhydroquinone - G003044



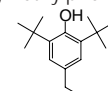
Nordihydroguaiaretic acid - G003049



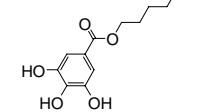
3-tert-butyl-4-hydroxyanisole - G003045



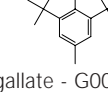
2,6-di-tert-butyl-4-hydroxymethylphenol - G003046



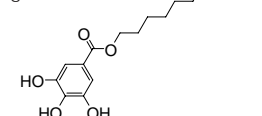
Octyl gallate - G003052



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



Lauryl gallate - G003053



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