

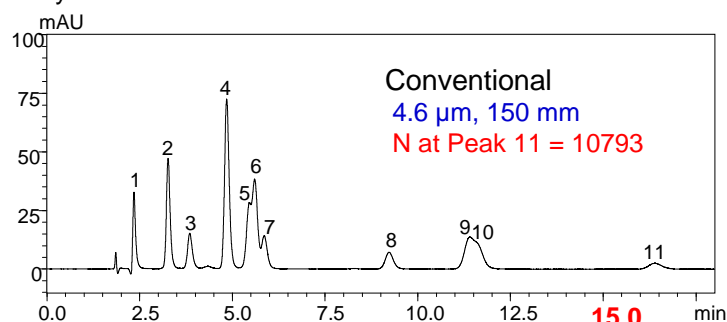
Nexera Application Data Sheet No. 9

Ultra-High-Resolution Analysis of Aromatic Carboxylic Acids

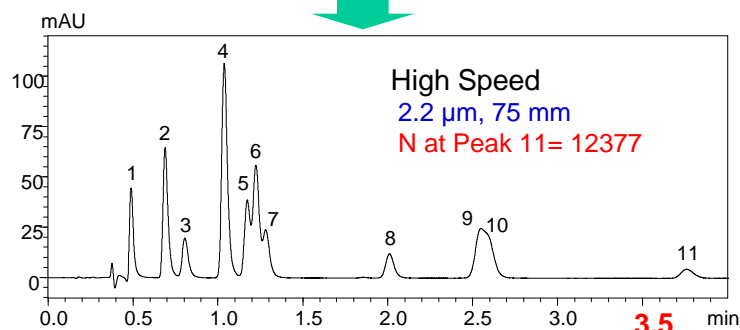
Plants and processed foods contain a variety of hydroxycinnamic acid derivatives and hydroxybenzoic acid derivatives. A high-resolution column is required for their analysis to achieve mutual resolution and resolution from the impurity components in the sample. Methods using a long, sub-2 μm column are available to achieve high resolution, but they demand a UHPLC system with high pressure tolerance. The Nexera 130 MPa pressure tolerance offers adequate capacity to meet these requirements. This Application Data Sheet introduces the ultra-high-resolution analysis of aromatic carboxylic acids using Shimadzu Nexera with a Shim-pack XR-ODS III column.

Simultaneous Analysis of 11 Aromatic Carboxylic Acid Components

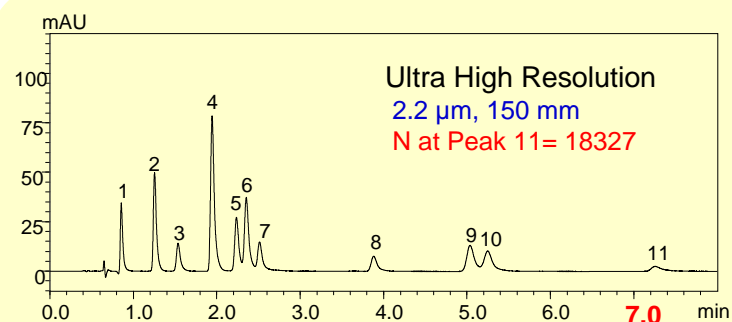
Ten aromatic hydroxycarboxylic acid components and benzoic acid were analyzed using a 150 mm-long Shim-pack XR-ODS III column (particle size: 2.2 μm , 100 MPa pressure tolerance) to achieve high resolution and to reduce the analysis time.



Column : Shim-pack VP-ODS
(150 mmL. x 2.0 mm I.D., 4.6 μm)
Mobile Phase : A : 0.15% Perchloric acid in Water
B : Acetonitrile/Methanol=1/1
A/B = 79.5/20.5
Flow Rate : 0.2 mL/min
Column Temp. : 40 °C
Detection : UV 254 nm
Pressure : 7 MPa



Column : Shim-pack XR-ODS II
(75 mmL. x 2.0 mm I.D., 2.2 μm)
Mobile Phase : A : 0.15% Perchloric acid in Water
B : Acetonitrile/Methanol=1/1
A/B = 79.5/20.5
Flow Rate : 0.5 mL/min
Column Temp. : 40 °C
Detection : UV 254 nm
Pressure : 37 MPa



Column : Shim-pack XR-ODS III
(150 mmL. x 2.0 mm I.D., 2.2 μm)
Mobile Phase : A : 0.15% Perchloric acid in Water
B : Acetonitrile/Methanol=1/1
A/B = 79.5/20.5
Flow Rate : 0.5 mL/min
Column Temp. : 40 °C
Detection : UV 254 nm
Pressure : 83 MPa

Peaks :

1. Gallic acid, 2. Protocatechuic acid, 3. Chlorogenic acid, 4. *p*-Hydroxybenzoic acid, 5. Caffeic acid, 6. Vanillic acid, 7. Syringic acid, 8. *p*-Coumaric acid, 9. Ferulic acid, 10. Sinapic acid, 11. Benzoic acid