Technical Report

AS/MSD-017 Liquid Chromatograph

Analysis of Antioxidants -TBHQ, BHA, BHT-

Antioxidants are added to foods to prevent fats from becoming rancid by protecting them from acidification by oxygen in the air. In this study, three antioxidants, *tert*-butylhydroquinone (TBHQ), butylhydroxyanisol (BHA), and dibutylhydroxytoluene (BHT) were separated by a reversed phase column and detected by both UV and MS Detectors. The results are presented here. The use of TBHQ is not permitted in Japan, and thus, the analysis is performed to confirm the presence or absence of the additive. By confirming the retention time and mass spectrum of the target component, a more reliable analysis is possible.

[1] Masakazu Horie, Bunseki, p.124 (2009)

5610 MS Detector

Analysis of 3 Antioxidants by LC-MS

■ Analytical Conditions

Table 1 MS Detector Settings

Ionization method	ESI
Ionization mode	Negative
Ionization voltage	2100 V
Measurement mode	Scan (*m/z* 150-230)

Table 2 Conditions for HPLC Setting

Column	MightysilRP-18MS (5 µm) 2.0 mm I.D. x 150 mm (Kanto Kagaku)
Mobile phase	CH_3CN / CH_3OH /0.05% CH_3COOH = 2 / 2 / 1
Flow rate	0.2 mL/min (Split ratio = 1:50)
Injection vol.	5 µL (100 mg/L each)
Detection wavelength	280 nm

■ LC-MS Analysis

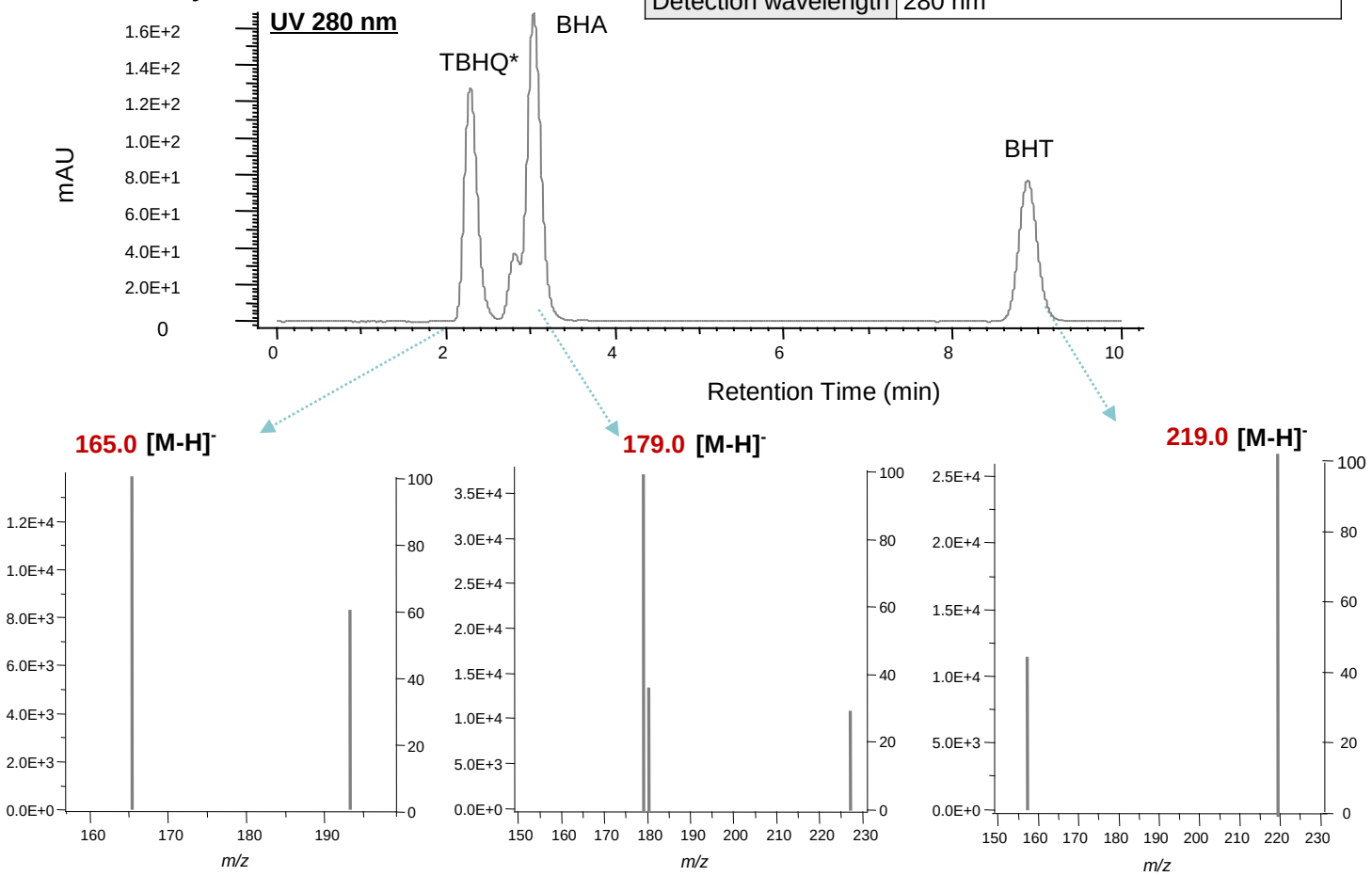

Figure 1 UV Chromatogram (Top) and Mass Spectrum (Bottom) of 3 Antioxidants

*The use of TBHQ is not permitted in Japan.
The data introduced here was provided by Kita-ku Public Health Center, Tokyo.

<Main system configuration> Chromaster 5110 Pump, 5210 Autosampler, 5310 Column Oven, 5410 UV Detector, 5610 MS Detector

NOTE: These data are an example of measurement; the individual values cannot be guaranteed.

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