

Simultaneous Detection by MS, PDA and Fluorescence Detectors with LCMS-2010A System

To improve the reliability of qualification in LC-MS analysis, light absorption (UV) detector and photodiode array (PDA) detectors, which are often used in HPLC analysis, are adopted in addition to mass spectrometers.

Using the high-performance liquid chromatograph mass spectrometer LCMS-2010A and its control/processing software LCMSsolution, three phenolic antioxidants BHA (Butylated hydroxyanisole), NDGA (Nordihydroguaiaretic acid) and TBHQ (tert-butyl hydroquinone) were analyzed. Detection was made using fluorescent, PDA and MS

detectors. The flow line was branched using a splitter after the column for a flow ratio of 8:2 for fluorescent and PDA/MS detectors.

Fig. 1 shows the chromatograms obtained by each detector. Fig. 2 shows the mass spectra for TBHQ, NDGA and BHA. Quasi-molecular ions ($[M-H]^-$) were detected for all components. Using LCMSsolution allows simultaneous acquisition of data from fluorescence, PDA and MS detectors, improving the qualification reliability.

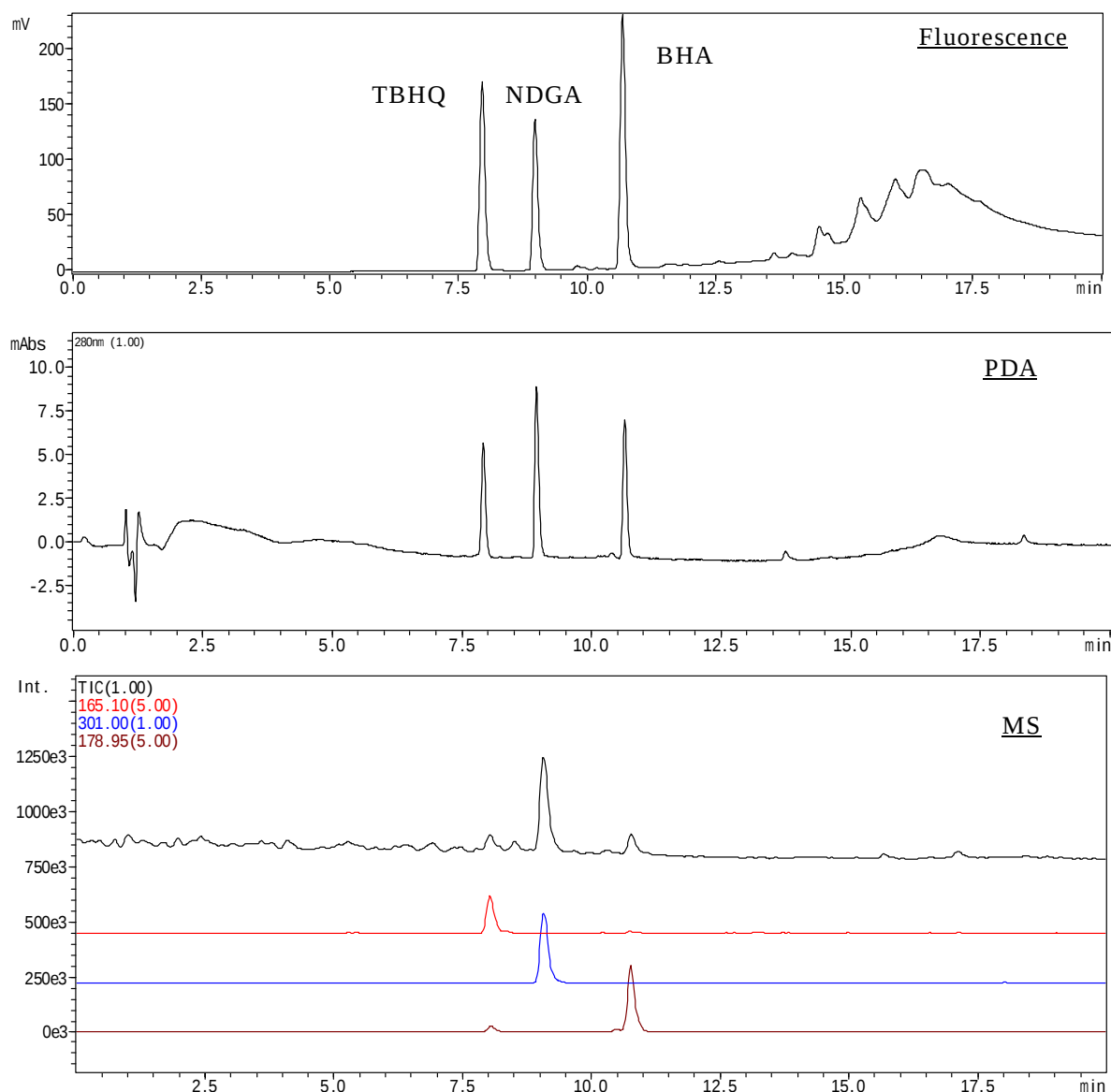


Fig. 1 Chromatograms for Phenolic Antioxidants Obtained by Fluorescence, PDA and MS Detectors

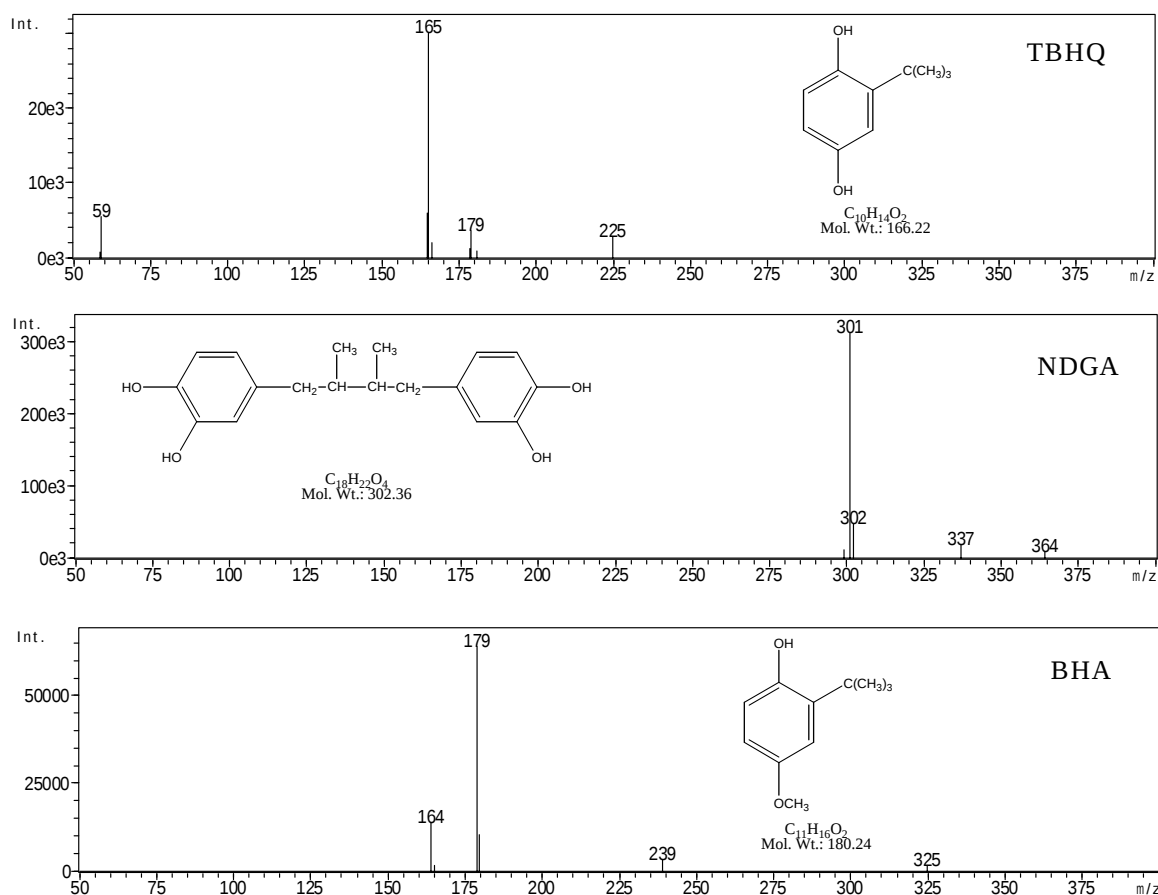


Fig.2 Mass Spectra for TBHQ, NDGA and BHA

Table 1 Analytical Conditions

Instrument	:LCMS-2010A system		
Column	: Shim-pack FC-ODS (4.6 mmI.D. x 75 mm)		
Mobile phase A	: water containing 0.05% acetic acid		
Mobile phase B	: acetonitrile		
Gradient program	:10%B(0min) – 95%B(15min) – 95%B(20min)		
Flow rate	:1.0 mL/min , Split ratio 2:8 (diode array detector & MS detector : fluorescence detector)		
Injection volume	: 5uL		
Column temperature	: 40		
Detector	:LCMS-2010A , SPD-M10Avp , RF-10A _{XL}		
wave length	:PDA 240 – 340nm	RF Ex: 275nm	Em: 365
Probe voltage	: -3.5 kV (ESI-Negative mode)		
CDL temperature	: 250	BH temperature	: 200
Nebulizing gas flow	: 1.5 L/min		
Drying gas flow	:0.15MPa		
CDL voltage	: -50V		
Q-array DC voltage	: SCAN-mode	Q-array RF	:SCAN-mode
SCAN range	:m/z 50 - 400		

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