

Analysis of Sugars by High Performance Liquid Chromatography with Evaporative Light Scattering Detection

Introduction

Evaporative Light Scattering Detector (ELSD) is an universal HPLC detector whose detection principle is the light scattering phenomenon. The scattering occurs when light is irradiated to particles of residual involatile components after removing the volatile mobile phase by heating from the column effluent sprayed with nitrogen gas. At detection part, LED is used as a light source for irradiating to particles of involatile components and scattered light is converted to electrical signal by photomultiplier to measure intensity. Sugar and fat which had been usually measured using refractive index detector or short wavelength range of UV detector can be measured with higher resolution and more stable baseline.

In this report, monosaccharide and disaccharide were analyzed by using ELSD with polymer NH₂ column in HILIC mode.

Keywords : Sugar, HILIC, Polymer NH₂ column, ELSD

Experimental

Equipment

Pump: PU-2089
 Autosampler: AS-2057
 Column oven: CO-2060
 Detector: ELS-2040

Conditions

Column: Shodex Asahipak NH2P-50 4E (4.6 mmID x 250 mL)
 Eluent: Water/Acetonitrile (25/75)
 Flow rate: 1.0 mL/min
 Column temp.: 30°C
 ELSD condition: Nebulizer temp.: 30°C
 Evaporator temp.: 30°C
 Gas flow rate; 1.4 SLM

Injection volume: 10 μL

Standard sample: Rhamnose, Fructose, Glucose, Sucrose, Maltose
 1.0 mg/mL each in Water/Acetonitrile (50/50)

Result

Fig. 1 shows the chromatogram of the standard mixture of monosaccharide and disaccharides. Each component was clearly separated and detected.

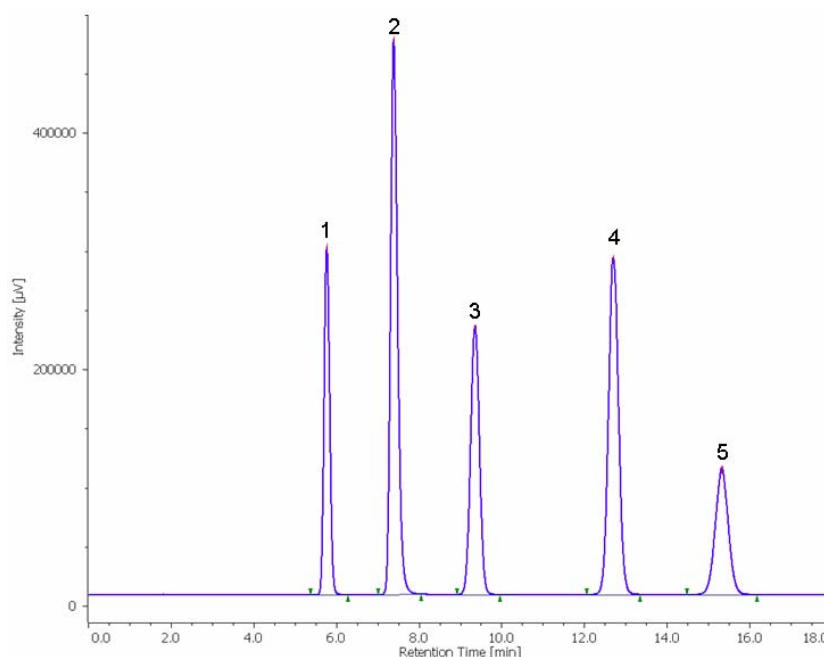


Fig. 1. Chromatogram of standard mixture of sugar
 1: Rhamnose, 2: Fructose, 3: Glucose, 4: Sucrose, 5: Maltose

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