

## Analysis of *p*-Hydroxybenzoate Esters by High Performance Liquid Chromatography with Evaporative Light Scattering Detection

### Introduction

Evaporative Light Scattering Detector(ELSD) is an universal detector of HPLC by employing detection principle of light scattering. Effluent from a column is sprayed with N<sub>2</sub> gas and then is heated for evaporative removal of volatile mobile phase and then the light is irradiated to residual involatile components to measure the light scattering.

In the detection part, LED is used as a light source for irradiating to particle of involatile components and scattered light is transformed into electric signal by photomultiplier to measure its 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 sensitivity and more stable baseline.

In this report, *p*-Hydroxybenzoic acid and *p*-Hydroxybenzoate esters(paraben) which are used as an antiseptic for food, pharmaceutical products and cosmetics were measured and analyzed by using ELSD as a detector.

**Keyword :** paraben, C18 column, ELSD

### Experimental

#### Equipment

Pump: PU-2089  
 Autosampler: AS-2057  
 Column oven: CO-2060  
 Detector: ELS-2041

#### Conditions

Column: CrestPak C18S (4.6 mmID x 150 mmL, 5 μm)  
 Eluent: Acetonitrile/Water(60/40)  
 Flow rate: 1.0 mL/min  
 Column temp.: 40°C  
 ELSD condition: Nebulizer temp.: 30°C  
 Evaporator temp.: 30°C\*  
 Gas flow rate; 1.2 SLM

Injection volume: 10 μL

Standard sample: *p*-Hydroxybenzoic acid 0.05 mg/mL

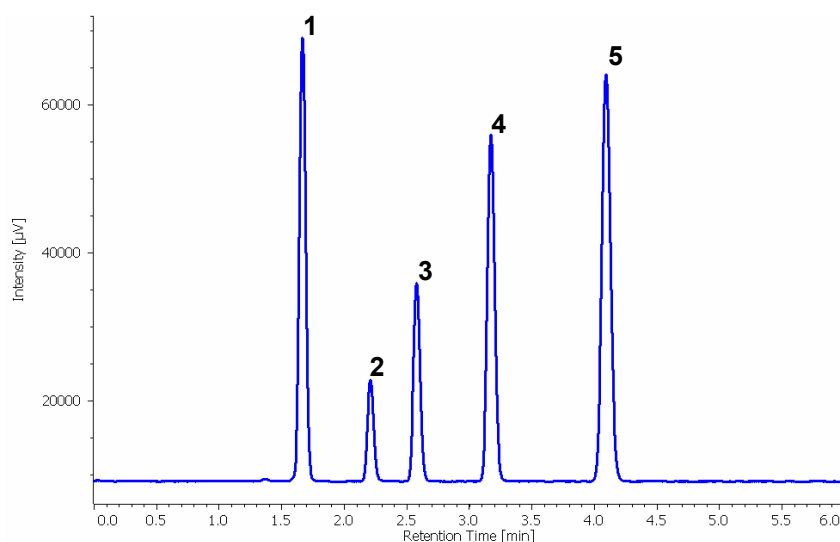
*p*-Hydroxybenzoate esters 0.1 mg/mL each in Acetonitrile

\* Regarding Methyl 4-hydroxybenzoate and Ethyl 4-hydroxybenzoate which are semi volatile materials, the peak height depends on evaporation temperature.

Peak height can be larger by setting lower temperature.

### Result

Fig. 1 shows the chromatogram of *p*-Hydroxybenzoic acid and paraben. Each component was successfully detected.



**Fig. 1.** Chromatogram of paraben

1: *p*-Hydroxybenzoic acid, 2: Methyl 4-hydroxybenzoate, 3: Ethyl 4-hydroxybenzoate,  
 4: Propyl 4-hydroxybenzoate, 5: Butyl 4-hydroxybenzoate

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