Application Note

620016X

Analysis of Additives in Soft Drink Using Extreme Liquid Chromatography (X-LC®)

Introduction

Common additives in soft drink include caffeine, aspartame, benzoic acid, and acesulfame-K. Quality control demands to determine these additives. HPLC has been used for this analysis. An increase in the number of samples to be measured requires high-throughput analysis. In order to meet this requirement, we have applied extreme high pressure liquid chromatography system (X-LC) equipped with a 2 µm packing column to the analysis of these additives using high-pressure gradient method.

Experimental

The system used for the measurement consists of two 3185PU pumps, 3080DG degasser, 3080MX mixing unit, 3067CO column oven 3070UV UV/Vis detector, 3059AS autosampler and a chromatography data system. Soft drink is degassed and filtered with 0.45 µm membrane filter. A portion of 1 µL is injected.

Results and Discussion

Figure 1 shows the chromatogram of standard mixture of additives. Each component is sufficiently separated. The analysis time is within 2 minutes. X-LC enables to shorten the analysis time significantly, leading to high-throughput analysis and to reduce consumption of solvent.

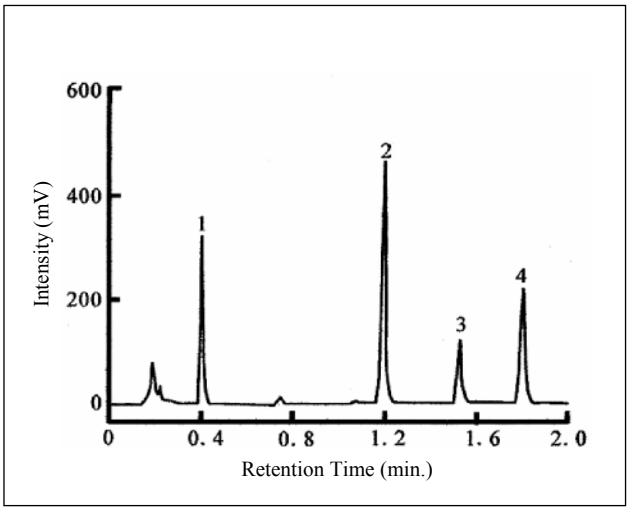

Figure 1 Chromatogram of the additives in soft drink
Components: 1=caffeine, 2=aspartame, 3=benzoic acid, 4=acesulfame K Injection volume: 1 □L (filtrate) Column: X-Presspak C18S (2,1 mm I.D. x 50 mm, 2□m particles in dianeter) column temperature: 40° C Mobile phase: A=50mM NaH_2PO_4(pH3.6), B=CH_3OH Gradient condition: 0 min=A/B(90/10) > 1.5 min=A/B(50/50) > 2.0 min=A/B(50/50) > 2.05 min=A/B(90/10) Flow rate: 0.6 mL/min. Detection wavelength: 214 nm Pressure: 32 MPa-41MPa

JASCO INTERNATIONAL CO., LTD
4-21, Sennin-cho 2-chome, Hachioji, Tokyo 193-0835, Japan
Tel: +81-42-666-1322, Fax: +81-42-665-6512