

## Analysis of Sweetener (Sucralose) in Coffee:

### Application example using an evaporative light scattering detector (ELSD)

Sucralose (4,1',6'-trichlorogalactosucrose) is a synthetic sweetener with 600 times the sweetness of sucrose, and a structure in which 3 of the hydroxyl groups in sucrose have been selectively replaced by chlorine atoms. With a sweetness similar in character to sucrose, and lacking any bitter or metallic taste (acridity), sucralose offer excellent preservation stability and heat stability, and consequently is used in many products including beverages and desserts. Since its discovery in 1976, sucralose has been approved by more than 30 nations, and was approved in Japan in 1999. Standard limits established for use in food include  $\leq 1.8\text{g/kg}$  in Japanese cakes and sweets, and  $\leq 0.4\text{g/kg}$  in beverages and alcoholic drinks.

Usually UV detectors set at low wavelength (210nm) or a RI detector are used to detect sucralose. Here, sucralose in a coffee beverage (sugarless) was analyzed using ELSD detectors in combination with a TSKgel Amide-80 HILIC column. Under these analytical conditions, analysis could be conducted simultaneously with aspartame and glycyrrhizic acid, which are also synthetic sweeteners.

Figure 1. Structural formula of sucralose

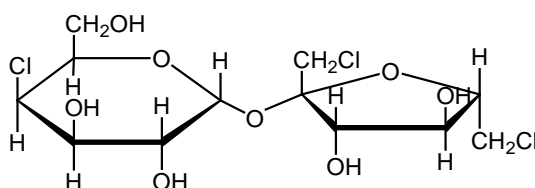
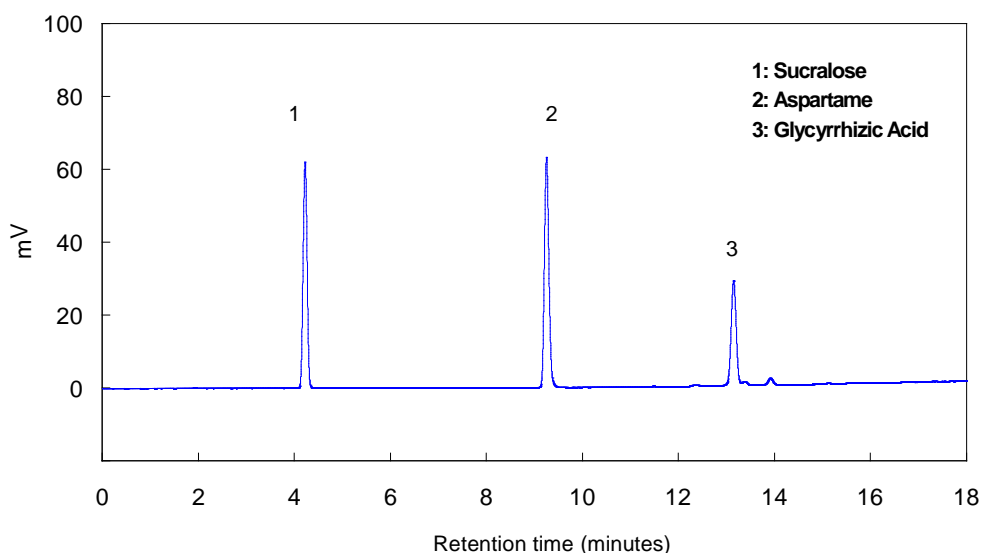


Figure 2. Chromatogram of standard sample (0.5g/L)



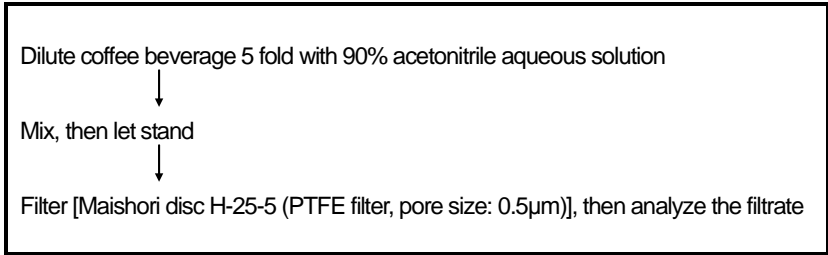
**Table 1. Analytical conditions**

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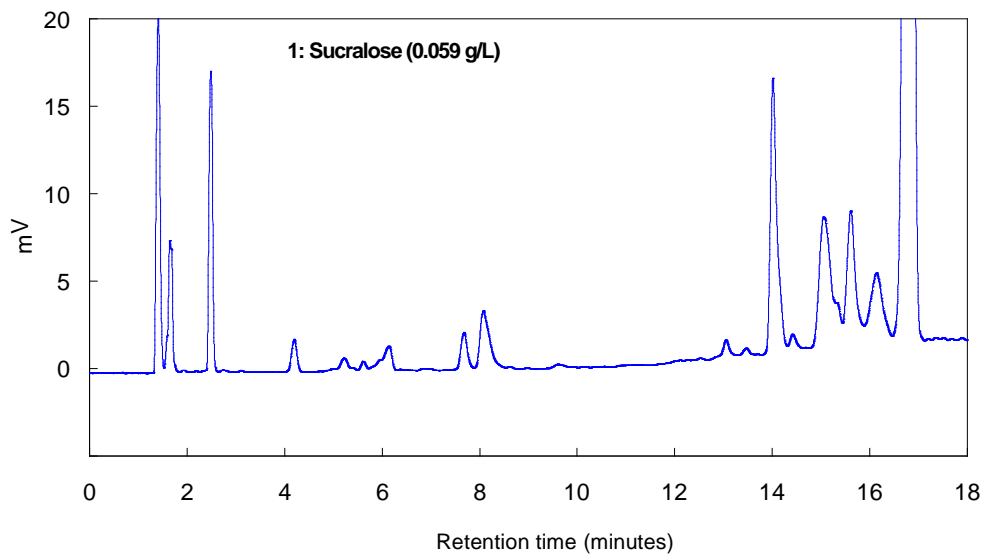
Column:	<b>TSKgel Amide-80, 3µm, 4.6mm ID x 15cm</b>
Mobile phase:	A: 10mM ammonium formate buffer (pH3.75) B: acetonitrile
Gradient:	0min (90%B) →15min (60%B) →16min (60%B) →17min (90%B)
Flow rate:	1.0mL/min
Detection:	ELSD (Agilent Technologies) Temp.: 40°C, Nebulizer gas; N2, Gas pressure: 370kPa, Gain; 4
Temperature:	40°C
Injection vol.:	10µL

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**Figure 3. Pretreatment of coffee beverage (sugarless)**



**Figure 4. Chromatogram of coffee beverage (sugarless)**





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