

# Flavor component analysis using non-polar and polar Magic Chemisorber®

## 1. *Kansho-shochu* (Japanese sweet potato spirit)

**[Background]** Flavor components in *Kansho-shochu* (Japanese sweet potato spirit) were analyzed by direct immersion sampling with solid phase extraction devices "Magic Chemisorber MC-S500" and "Polar Magic Chemisorber MC-PEG-S".

**[Experimental]** Nonpolar Magic Chemisorber® MC-S500 was attached to an Eco-Stick DF and immersed in 5.0 mL of *Kansho-shochu* containing 1.0 g of NaCl for 30 min at room temperature (stirring speed: 600 rpm). Then, the Magic Chemisorber® was briefly rinsed with distilled water and wiped with a clean paper tissue. It was then heated in a pyrolyzer furnace programmed from 100 to 230 °C (3 min hold) with a ramp rate of 40 °C/min. The thermally desorbed compounds were cryo-trapped at the head of a separation column using a MicroJet Cryo-Trap. Then the trapped volatiles were separated and detected by GC/MS. Likewise, analysis was done using the polar Magic Chemisorber® MC-PEG-S in an identical manner.

**[Results]** The chromatograms of the compounds extracted from *Kansho-shochu* by nonpolar and polar Magic Chemisorbers are shown in Fig. 1. The results of identification of major peaks are summarized in Table 1. The component ipomeamarone (19), which is characteristic to sweet potato spirit, was mainly extracted by the non-polar Magic Chemisorber. In addition, citronellol (12) and nerol (13), which are monoterpene alcohols, were extracted from both Magic Chemisorbers.

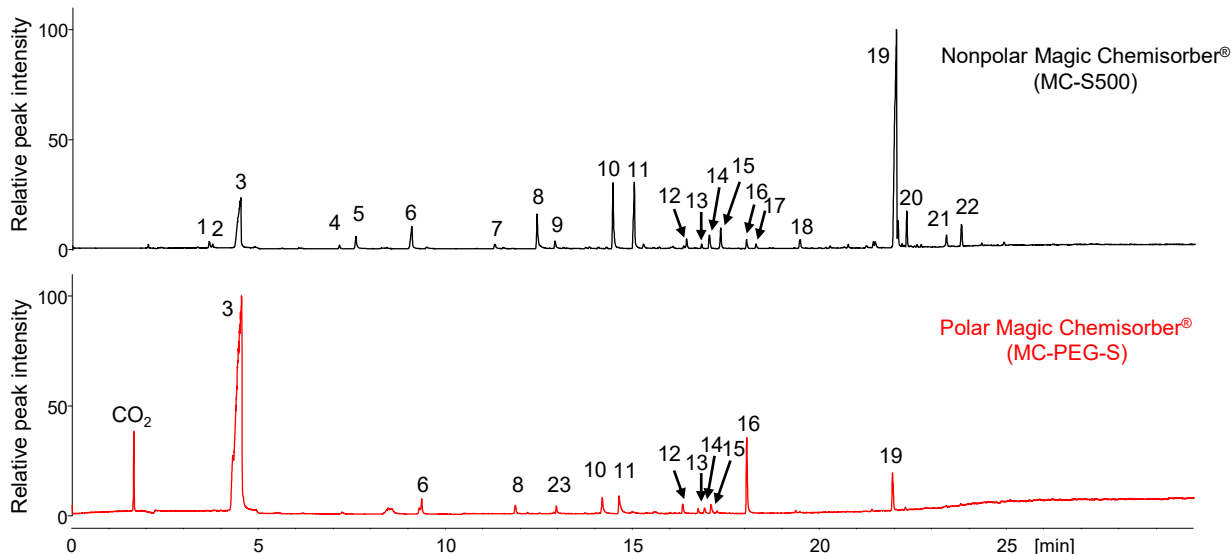


Fig. 1 Chromatograms of compounds extracted from *Kansho-shochu* by nonpolar and polar Magic Chemisorbers (immersion sampling)

Sample: *Kansho-shochu* 5.0 mL + Sodium chloride 1.0 g, Extraction: 30 min immersion at 25 °C (stirring speed 600 rpm)  
 Thermal desorption temp.: 100 - 230 °C (40 °C/min, 3 min hold), cryo-trapped with MicroJet Cryo-Trap  
 Separation column: Ultra ALLOY-CW (polyethylene glycol), L= 30 m, i.d.= 0.25 mm, df= 0.25 µm,  
 Column flow rate: 1 mL/min, Split ratio: 1/5, GC oven temp.: 40 °C (3 min hold) - 250 °C (10 °C/min, 14 min hold)

Table 1 Compounds extracted from *kansho-shochu*

#	Compound	#	Compound	#	Compound
1	Ethyl acetate	8	Ethyl octanoate	16	Phenethyl alcohol
2	1,1-Diethoxyethane	9	Nerol oxide	17	Dendrolasin
3	Ethanol	10	Unidentified	18	Ethyl tetradecanoate
4	Isobutyl alcohol	11	Ethyl decanoate	19	Ipomeamarone*
5	Isoamyl acetate	12	Citronellol*	20	Unidentified
6	2-Methyl-1-butanol Isoamyl alcohol	13	Nerol*	21	Unidentified
7		Rose oxide	14	Phenethyl acetate	22
		15	Ethyl dodecanoate	23	Acetic acid

\*T. Ohta *et al.*, *Agric. Biol. Chem.*, 54 (1990) 1353-1357.

**Keywords :** Solid phase extraction, Polar sorbent, PEG, Immersion sampling, Thermal desorption GC/MS, Sweet potato spirit

**Products used :** Multi-functional pyrolyzer, Magic Chemisorber® MC-S500, Magic Chemisorber® MC-PEG, MicroJet Cryo-Trap, UA-CW

**Applications :** Brewing, Food component analysis

**Related technical notes :** [MCA-011E](#)

Please forward your inquiries via our web page or send us a fax message.

**R&D and manufactured by :**  
**Frontier Laboratories Ltd.**

Phone: (81)24-935-5100 Fax: (81)24-935-5102  
<http://www.frontier-lab.com/>