

Components analysis using “Magic Chemisorber®”

1. Flavor Components in Red wine

[Background] Identification of flavor compounds by solid phase extraction (SPE) using Magic Chemisorber® is described for the analysis of a commercial red wine.

[Experimental] Magic Chemisorber® MC-S500 (PDMS thickness 500 µm) was immersed in 10 mL of a domestic red wine for 30 min at 22°C. Then, the surface of the Chemisorber was cleaned using KimWipes prior to the analysis. The Magic Chemisorber® was placed in a flow-through Eco-cup LHF, and heated to 250°C for 15 min. Thermally desorbed compounds were swept by a carrier gas to the GC injection port configured for splitless operation. The desorbed compounds were once cryo-trapped at the head the separation column using a MicroJet Cryo-Trap, and then they were sent to the separation column and detected by a quadrupole MS detector.

[Results] A chromatogram of the extracted compounds from the red wine is shown in Fig. 1, and peak assignments are summarized in Table 1. Various components contained in the red wine were observed including ethyl octanoate and decanoic acid. The results show that the use of the Magic Chemisorber® and the pyrolyzer configured for thermal desorption is a quick and simple technique for analyzing flavor components in liquid samples.

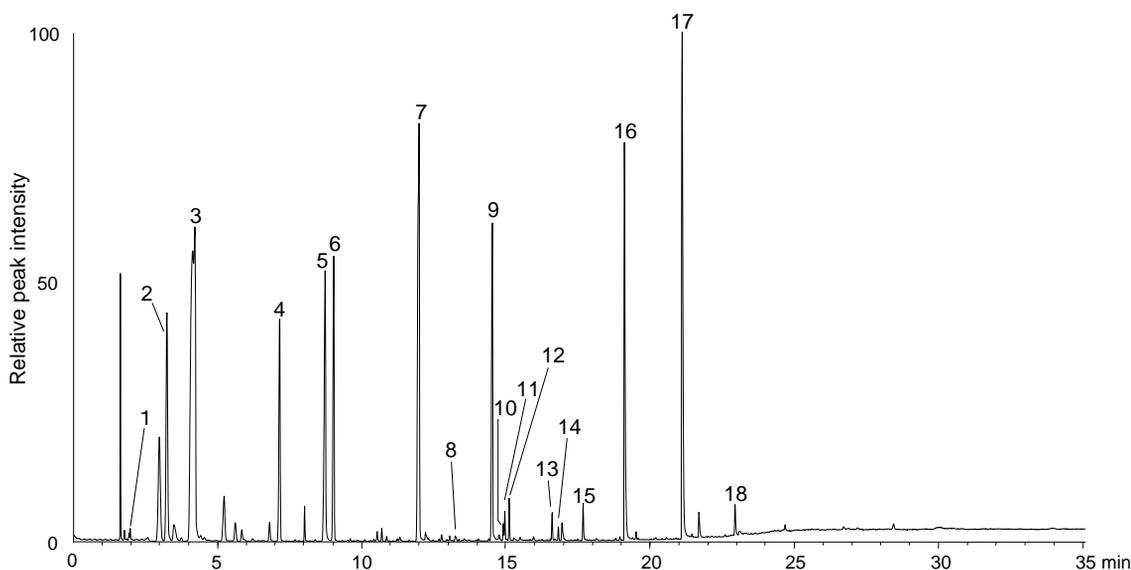


Fig. 1 Chromatogram of extracted compounds from red wine by Magic Chemisorber®

Sample amount: 10 mL, Extraction: 30 min immersion at 22°C
 Thermal desorption temp.: 250°C (15 min hold), cryo-trapped with MicroJet Cryo-Trap
 Separation column: Ultra ALLOY-CW (polyethylene glycol 20M), L=30 m, i.d.=0.25 mm, df=0.25 µm
 Column flow rate: 1 mL/min, Splitless mode, GC oven temp.: 40°C (3 min hold) - 250°C (10 °C/min, 30 min hold)

Table 1 Components extracted from red wine

#	Compound	#	Compound	#	Compound
1	Acetaldehyde	7	Ethyl octanoate	13	Phenethyl acetate
2	Ethyl acetate	8	Vitispirane	14	Ethyl dodecanoate
3	Ethanol	9	Ethyl decanoate	15	Phenylethyl alcohol
4	Isoamyl acetate	10	Ethyl Benzoate	16	Octanoic acid
5	Isoamyl alcohol	11	Diethyl succinate	17	Decanoic acid
6	Ethyl hexanoate	12	Ethyl 9-decenoate	18	Dodecanoic acid

Ref.: L. Wang et al., J. Chromatogr. A 1035 (2004) 277-279.

Keywords : Solid phase extraction, immersion method, thermal desorption GC/MS, red wine

Products used : Multi-functional pyrolyzer, Magic Chemisorber®, MicroJet Cryo-Trap, UA-CW, Flow through Eco-cup LHF

Applications : Food component analysis, additives analysis

Related technical notes : MCA-001E

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Frontier Laboratories Ltd.

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