

Solid phase extraction using new Polar Magic Chemisorber®

3. *Pueraria* decoction (*ge-gen-tang*)

[Background] Compounds in *pueraria* decoction, a kind of herbal medicines, were extracted by a new Magic Chemisorber® MC-PEG and were subsequently thermally desorbed, separated using gas chromatography and detected by a mass spectrometer (MS).

[Experimental] A Polar Magic Chemisorber® MC-PEG (film thickness of PEG: 30 μm, volume: 3.8 μL) was placed onto an Eco-Stick GD and immersed in 5.0 mL of *pueraria* decoction (with 1.0 g of NaCl) for 30 min at 25 °C. After 30 min, the Magic Chemisorber® was briefly rinsed with distilled water and wiped with a clean paper tissue. The Magic Chemisorber® was positioned in the pyrolyzer furnace and heated: 100 - 230 °C (3 min hold). Thermally desorbed compounds were swept by the helium carrier gas to the GC injection port. The desorbed compounds were cryo-trapped at the head of the separation column (UA-WAX) using a MicroJet Cryo-Trap. Then, the trap was heated, and the trapped volatiles were separated on the separation column and detected by a quadrupole mass detector. For comparison, the analysis was similarly performed using the nonpolar Magic Chemisorber® MC-S500.

[Results] Chromatograms of the extracted compounds from the *pueraria* decoction are shown in Fig. 1, and peak assignments are summarized in Table 1. Various polar components, including benzoic acid and cinnamic acid were observed in the chromatogram. The results show that the use of the Magic Chemisorber® MC-PEG and the pyrolyzer configured for thermal desorption is a quick and simple technique for analyzing polar components in liquid samples.

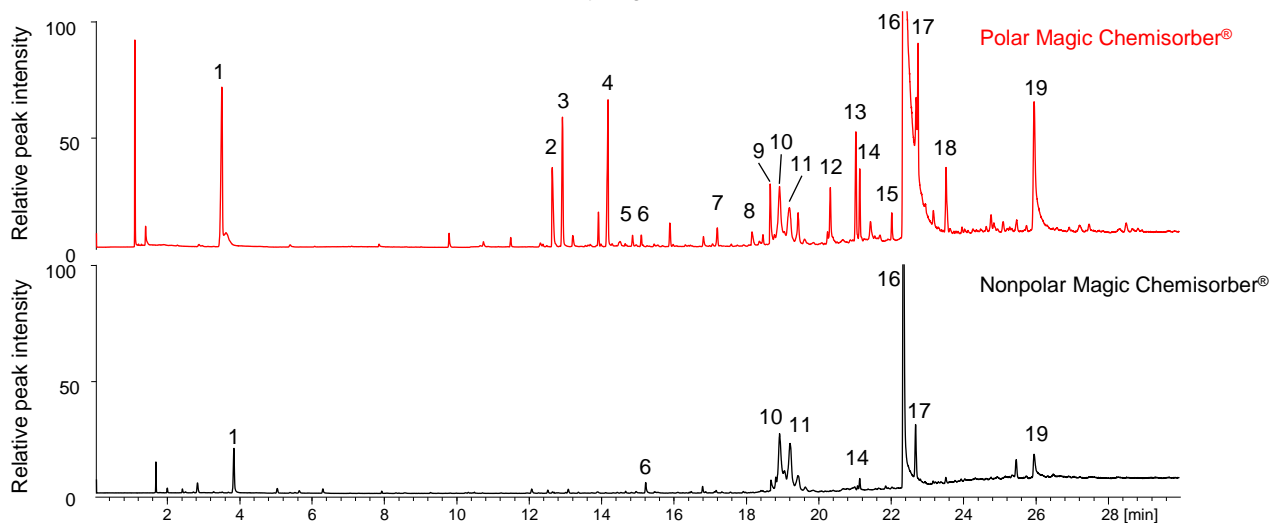


Fig. 1 Chromatograms of extracted compounds (immersion method) from *pueraria* decoction by polar and nonpolar Magic Chemisorber®

Sample amount: 5.0 mL with 1.0 g of NaCl, 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-WAX (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 *pueraria* decoction (compounds extracted only by polar Magic Chemisorber® are shown in red)

#	Compound	#	Compound	#	Compound
1	Ethanol	9	Ethyl maltol	16	Benzoic acid
2	Acetic acid	10	Butyl paraben	17	Coumaric acid
3	Benzaldehyde	11	Isobutyl paraben	18	Vanillin
4	Propylene glycol	12	4-Vinylguaiaicol	19	Cinnamic acid
5	Furfuryl alcohol	13	2,3-dihydro-3,5-dihydroxy -6-methyl-4H-pyran-4-one		
6	α-Terpineol	14	Cinnamyl alcohol		
7	Benzyl alcohol	15	Coumaran		
8	Maltol				

Keywords : Solid phase extraction, Polar sorbent, PEG, Immersion method, TD-GC/MS, *Pueraria* decoction

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

Applications : Drugs, additives analysis

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

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