

Sampling of micro-samples using Micro Sample Collector (2) - Qualitative analysis of unknown powders on table cloths -

[Background] Small-sized “unknown” substance on the surface of various materials often need to be collected and qualitatively analyzed. When using standard sampling tools, collecting a representative sample at trace levels has proven to be most challenging even for an experienced chemist. In this note, the qualitative analysis by thermal desorption (TD)-GC/MS is described for unknown powders which were collected from table cloths using an MSC¹⁾.

[Experimental] Two unknown powders on table cloths were each collected by gently touching the cloth surface with the micro coil and then retracting the coil into the syringe needle. Next, the needle was inserted into the GC injector (330°C). TD-GC/MS analysis was performed while the micro coil was positioned in the GC injector.

[Results] Chromatograms of the two unknown samples are shown in Figs. 1 and 2. Ibuprofen was present in unknown sample A. Acetylsalicylic acid, salicylic acid derived from hydrolysis of acetylsalicylic acid, and cyclic oligomer were the main components in unknown sample B. These compounds are often used in painkillers and their presence suggests that these two substances are painkillers.

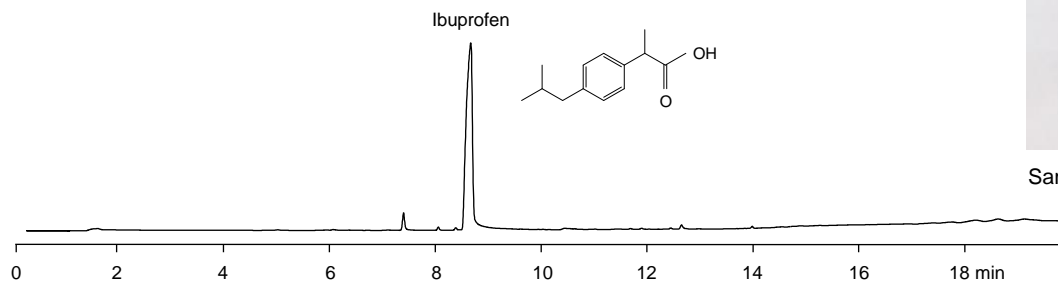


Fig. 1 Chromatogram of unknown powder A

GC injector temp.: 330°C, split ratio: 1/10, GC oven temp.: 40 - 330°C (20 °C/min, 5 min hold)
Separation column: Ultra ALLOY⁺-5 (5% diphenyl 95% dimethylpolysiloxane), L=30 m, i.d.=0.25 mm, df=0.25 µm, column flow rate: 1 mL/min

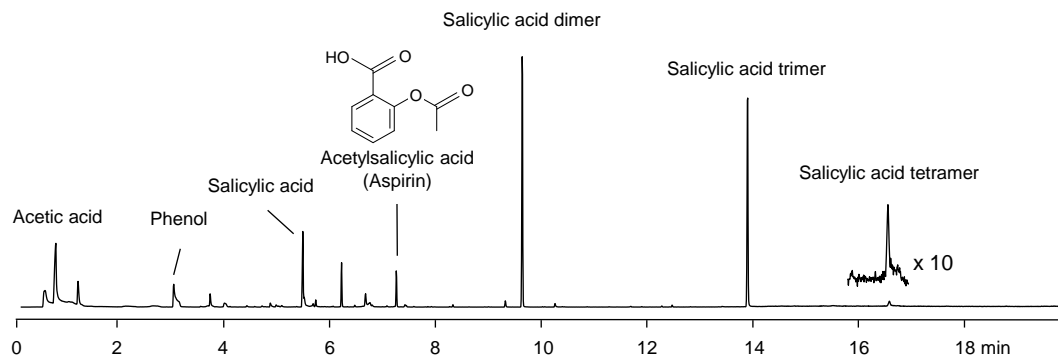


Fig. 2 Chromatogram of unknown powder B

GC injector temp.: 330°C (0.5 min hold), split ratio: 1/10, GC oven temp.: 60 - 330°C (20 °C/min, 6.5 min hold)
Separation column: Ultra ALLOY⁺-5 (5% diphenyl 95% dimethylpolysiloxane), L=30 m, i.d.=0.25 mm, df=0.25 µm, column flow rate: 1 mL/min

1) Technical note [PYT-032E](#)

Keywords : Sampling tool, Micro-sized sample, Small amount sample, Unknown sample, Powder sample, TD-GC/MS

Products used : Micro Sample Collector, UA⁺-5, Vent-free GC/MS adapter

Applications : Forensic science, Foreign material analysis

Related technical notes : [PYT-032E](#), [PYA1-089E](#)

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