Sampling of micro-samples using Micro Sample Collector (1)
- Qualitative analysis of unknown powders on a table cloth -

[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. We newly developed a specially designed sampling tool: “Micro Sample Collector (MSC)”[1]. In this note, the qualitative analysis by thermal desorption (TD)-GC/MS is described for unknown powders which were collected from a table cloth using an MSC.

[Experimental] Two unknown powders on a table cloth 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 (300ºC). TD-GC/MS analysis was performed while the micro coil was positioned in the GC injector.

[Results] Chromatograms of the two unknown samples collected using MSC are shown in Fig. 1. Acetoaminophen, caffeine, and isopropyl antipyrine were present in unknown sample A. Acetoaminophen was the main component in unknown sample B. These compounds are often used in cold medicines and their presence suggests that these two substances are cold medicines.

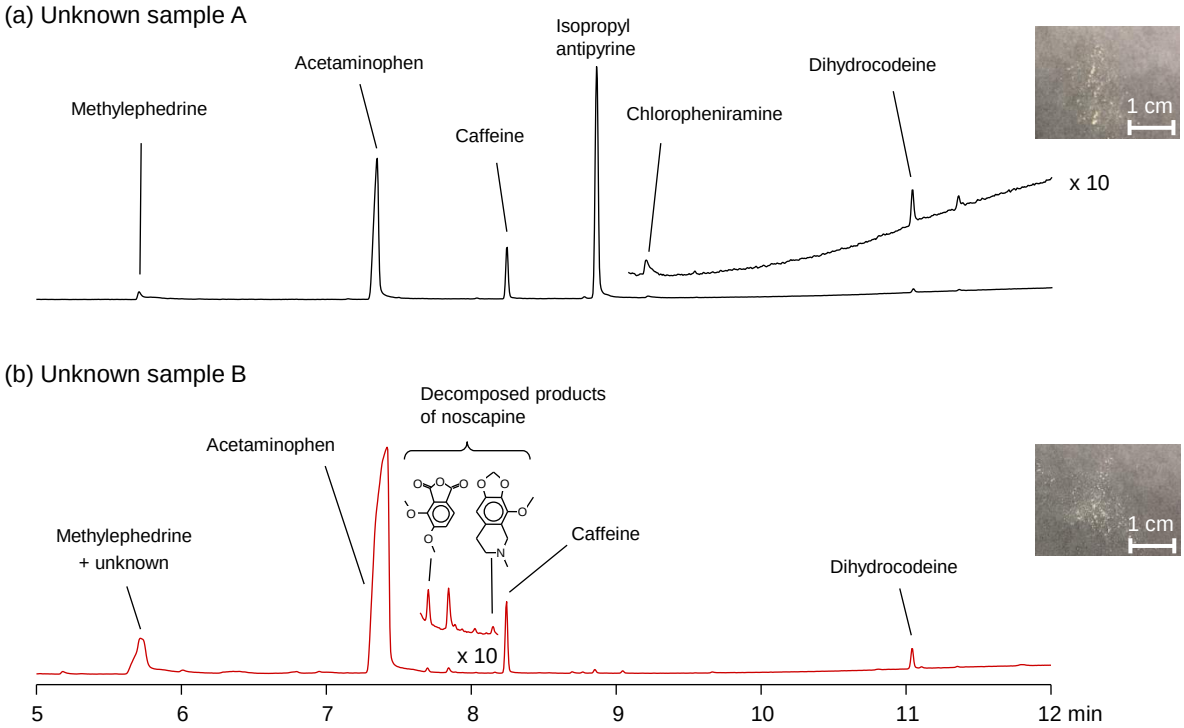

Fig. 1 Chromatogram of unknown fine powder.

GC injector temp.: 300ºC (1 min hold), split ratio: 1/10, GC oven temp.: 80 - 320ºC (20 ºC/min)
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, PYA1-069E, PYA1-085E

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