

Heart Cut-EGA GC/MS Analysis of Evolved Gases From Crude Drug Propolis

[Background] Composition and activity of crude drugs depend on various factors including species, producing area, harvest time, individual species, etc. A simple analysis technique that can determine subtle differences of compositions is desired. Here, the evolved gas analysis (EGA) was used to obtain a thermogram, in which multiple temperature zones were heart-cut and each zone was separated by a separation column, followed by GC/MS analysis.

[Experimental] By using the Selective Sampler and MicroJet Cryo Trap, multiple temperature zones of the thermogram were heart-cut and each zone was analyzed by GC/MS equipped with a separation column.

[Results] Fig. 1 shows the thermogram for propolis which is comprised of three Zones, A through C. Fig. 2 shows the analysis result of each zone obtained by the heart cut GC/MS. Zone A contained volatiles such as acetic acid and essential oils, while Zone B contained free phenols, and aromatic acids, in addition to various flavonoids, representatives of antibiotics. In Zone C, flavonoids and aromatic products presumably generated by decomposition of flavonoids were observed.

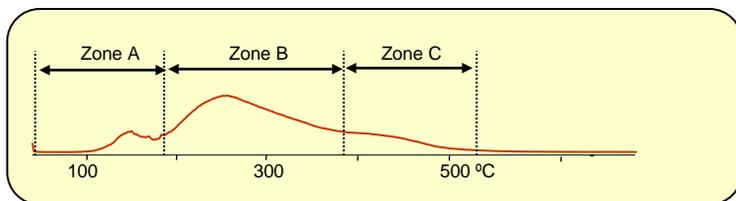


Fig. 1 Thermogram of propolis

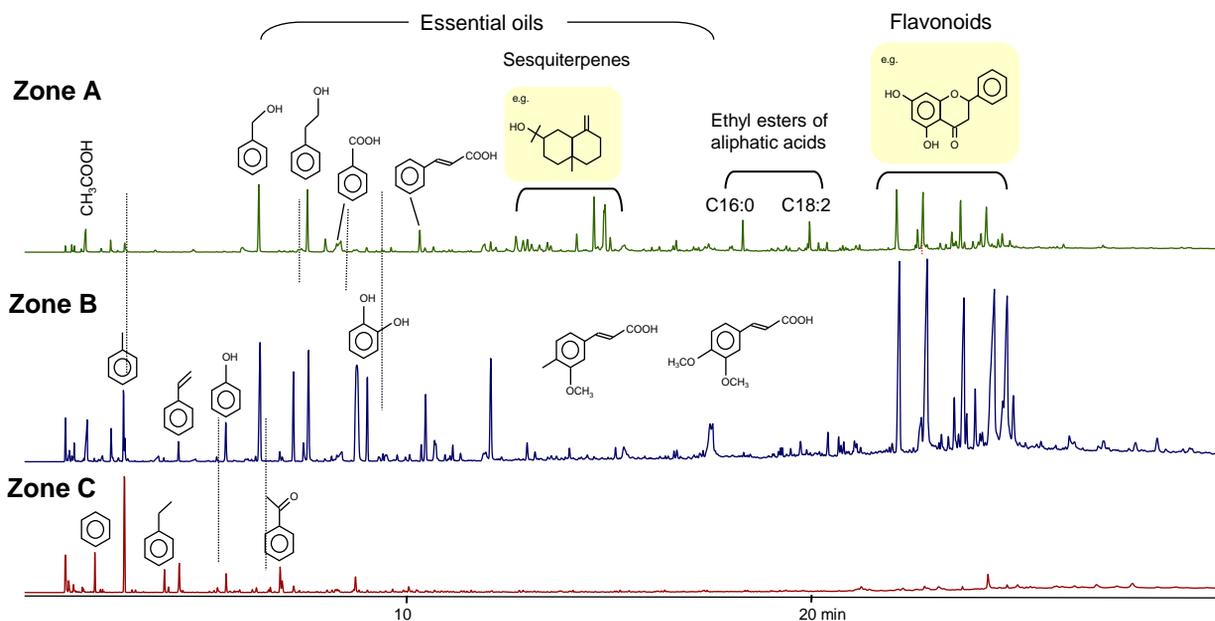


Fig. 2 Heart cut GC/MS chromatograms of Zones A, B, and C of Thermogram shown in Fig. 1

Pyrolysis temperature: 50~700°C (20°C/min), Column head pressure : 50 kPa, Split ratio : 1/50, Separation column : Ultra ALLOY⁺-5 (5 % diphenyl 95 % dimethylsiloxane), L=30 m, Id 0.25 mm, DF= 0.25 μm, GC oven temperature: 40°C~300°C (10°C/min), Sample size : 300 μg, Detector : MS (m/z=29~550, 2 scans/sec)

Keywords : Crude drug (galenical), Propolis, Evolved gas analysis, Heart cut EGA-GC/MS

Products used : Multi-functional pyrolyzer, Vent-free GC/MS adapter, Selective Sampler, MicroJet Cryo-Trap, UA-5

Applications : General crude drug analysis

Related technical notes : PYA1-030E, PYA1-031E

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