

Differentiation of *Lavandula angustifolia* (Lavender) species using EGA-MS

[Background] *Lavandula* (common name **Lavender**) is a genus of 39 species of flowering plants in the mint family, Lamiac. Lavender is an ornamental plant with colorful flowers and a strong characteristic fragrance. Commercially the plant is grown mainly for the production of the lavender essential oil which has medicinal properties. Extracts are also used as fragrances for bath products and added to various foods (e.g., salad dressing, tea, etc). The essential oil from each species is subtly different and so there is interest in a simple analytical technique for differentiating the various species of Lavender. Evolved Gas Analysis (EGA)-MS will give us a thermal profile of the sample constituents⁽¹⁾. The sample is analyzed 'as is' – no sample pretreatment is necessary.

[Experimental] The EGA-MS data was performed using a Multi-Shot Pyrolyzer (EGA/PY-3030D). The EGA tube (deactivated 2.5m x 0.15 mm id) was interfaced to the MS interface using a vent-free GC/MS adapter.

[Results] The EGA thermogram of each Lavender specie is shown below. As expected, the thermal profiles are similar yet there are sufficient differences to identify the five species. For example, English can be differentiated from Hidcote and French using the relative abundances at 2 minutes and 9.1 minutes. The average mass spectrum of zones A, B, and C of French, English and Hidecote, respectively, are shown in Fig. 2 Comparing the mass spectra, differentiation is made easier. More exact differentiation can be done using extracted ion chromatograms.

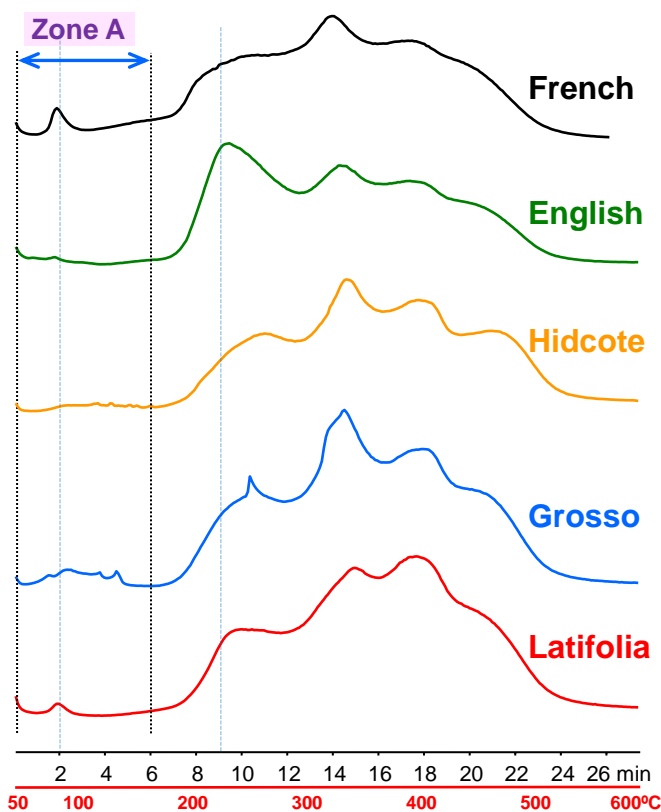


Fig. 1 EGA thermograms of lavender samples

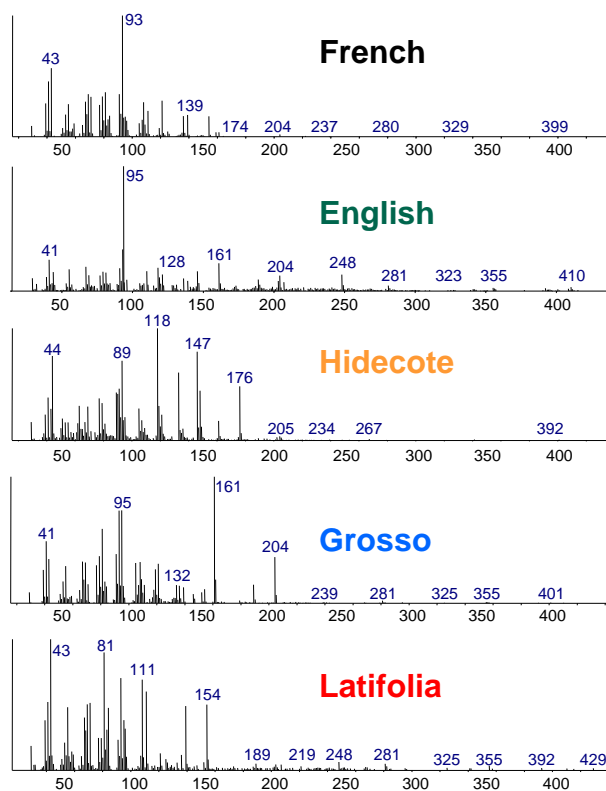


Fig. 2 Mass spectra of zones A of Fig. 1

Py furnace temp.: 50 - 600 °C (20 °C/min), GC inj. temp.: 300°C, GC oven temp.: 300°C, GC/MS ITF temp.: 300°C, EGA tube, flow rate: 1.0 ml/min, Split ratio: 1/20, sample wt.: 500 µg

Keyword : Evolved Gas Analysis, EGA-MS, thermogram, forensic differentiation, Lavender

Applications : Differentiating plant species

Related technical notes : PYA1-076E, PYA3-013E

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