INVESTIGATION OF THE ESSENTIAL OIL OF *Hyssopus zeravshanicus*

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The information given in the literature [1, 2] on the essential oil of Hyssopus zeravshanicus Dub. (Pazij) inadequately reflects the chemical nature of its components. Consequently, we have studied the composition of this oil by gas–liquid chromatography (GLC).

The yield of oil from the air-dry raw material amounted to 0.6%; it had the following physical constants: n_D^{20} 1.4760; d_4^{20} 0.9670, acid No. 6.3, ester No. 13.4, ester No. after acetylation 46.8. The oil was analyzed on a "Khrom-2" chromatograph with a flame-ionization detector using a column 160 × 4 mm for the acids and 170 × 4 mm for the other components with as solid support Celite-545 (30-60 mesh) and as the liquid phase poly(ethylene sebacate) (25% on the Celite) for the acids and a mixture of poly(ethylene sebacate) and polyethyleneglycol-1540 (2 : 3) (15% on the Celite) for the other components.

The oil was separated into acidic, phenolic, and neutral fractions, and the components of these fractions were identified by comparing their retention times with those of known substances, and also from the increase in the areas of the respective peaks when the pure compounds were added to the mixture. The quantitative contents of the components were determined (as percentages of the whole oil) by planimetry.

The acids (0.91%) in the form of the methyl esters were analyzed at 128°C. Acetic, propionic, butyric, valeric, isovaleric, caproic, enanthic, caprylic, isocaprylic, pelargonic, and capric acids were found.

The phenols were analyzed at 181°C. Thymol (1.69%) and carvacrol (1.16%) were shown to be present.

The bulk of the essential oil (91.09%) was separated in vacuum into low-boiling and high-boiling fractions. The following components were found in the low-boiling fraction, which was analyzed at 114°C (%):

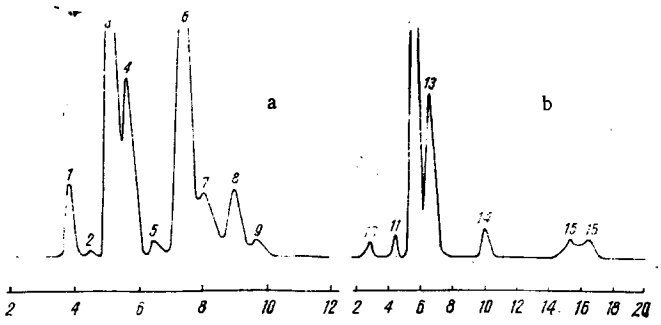

Fig. 1. Chromatograms of the low-boiling (a) and high-boiling (b) fractions of the essential oil of Hyssopus zeravshanicus: 1) α-pinene; 2) β-pinene; 3) sabinene; 4) myrcene; 5) α-terpinene; 6) limonene; 7) γ-terpinene; 8) p-cymene; 9) terpinolene; 10) fenchone; 11) menthone; 12) *l*-pinocamphone; 13) *l*-isopinocamphone; 14) verbenone; 15) *l*-pinocampheol; 16) *l*-isopinocampheol.

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α-pinene (1.81), β-pinene (0.48), sabinene (16.34), myrcene (5.03), α-terpinene (0.8), limonene (13.75), γ-terpinene (3.46), p-cymene (2.78), and terpinolene (0.72) (Fig. 1a).

The high-boiling fraction of the essential oil was analyzed at 160°C. The following substances were found in this fraction (%): fenchone (0.5), menthone (1.08), *l*-pinocamphone (23.0), *l*-isopinocamphone (12.1), verbenone (3.68), *l*-pinocampheol (2.17), and *l*-isopinocampheol (3.39) (Fig. 1b).

LITERATURE CITED

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