

STUDY OF THE ESSENTIAL OIL OF *Ajania fastigiata*

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The essential oil was distilled with steam from the epigeal part of *Ajania fastigiata* (Winke) Peoja K., family Compositae, collected in the flowering period in the foothills of the Trans-Ili Ala-Tau. The yield of essential oil was 0.6-1.0%. The oil consisted of a clear yellow liquid with the following constants: d_4^{20} 0.9351; n_D^{20} 1.4715; $[\alpha]_D^{20} + 6.0^\circ$; acid No. 4.1; ester No. 91.9.

To obtain individual fractions, the oil was treated with 5% aqueous solutions of sodium bicarbonate and caustic soda [1]. The free acids and phenols were isolated. After being washed to neutrality and dried, the oil was distilled in vacuum to give a low-boiling fraction of terpene hydrocarbons collected up to 65°C at 10 mm Hg and a residual high-boiling fraction of oxygen-containing terpenes. The two fractions were analyzed separately by gas-liquid chromatography on a "Khrom-2" chromatograph with a flame-ionization detector. Nitrogen was used as the carrier gas, at a rate of flow of 25 ml/min. The components of the essential oil were separated best in a copper column (1.7 × 0.4 cm) filled with Celite, 30/60 mesh. The liquid phase consisted of a mixture of 2/3 of PEG sebacate and 1/3 of PEG-1540 in an amount of 15% of the solid support. The acids, in the form of their methyl esters, and the terpene hydrocarbons were analyzed at 114°C, the oxygen-containing terpenes at 154°C, and the phenols at 170°C. The results of the chromatographic separation of the fractions are shown on a common chromatogram (Fig. 1).

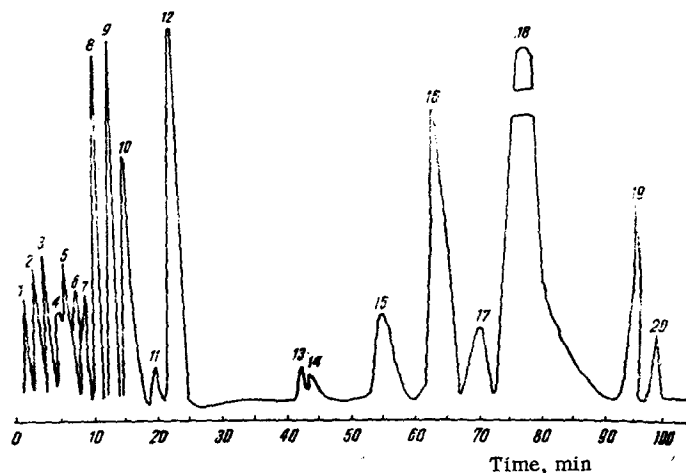


Fig. 1. Chromatogram of the essential oil of *Ajania fastigiata*: 1-7) Acids: acetic, butyric, valeric, enanthic, iso-enanthic, caprylic, pelargonic; 8-12) terpenes: α -pinene, camphene, β -pinene, limonene, γ -terpinene; 13, 14) unidentified; 15-18) oxygen-containing hydrocarbons: p-cymene, camphor, isoborneol, borneol; 19, 20) phenols: carvacrol and thymol.

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The substances were identified by comparing the retention times of known substances with the retention times of the components of the oil under investigation and from the increase in the areas under the corresponding peaks with the addition of the known substances.

The amounts of the individual fractions were determined gravimetrically. The proportions of the components of each fraction were determined from the areas of the peaks, which were obtained by multiplying in each case the height of the peak by its width at half-height.

The results of the investigation of the essential oil of *Ajania fastigiata* showed that it has the following composition (%): acids 3.5 - acetic, butyric, valeric, enanthic, isoenanthic, caprylic, pelargonic; phenols - thymol 0.5, carvacrol 1.0; terpene hydrocarbons - α -pinene 4.2, camphene 4.0, β -pinene 4.1, limonene 0.4, γ -terpinene 6.0; and oxygen-containing hydrocarbons - p-cymene 7.0, camphor 14.8, isoborneol 3.6, borneol 41.0.

LITERATURE CITED

1. M. Goryaev and I. Pliva, Methods of Investigating Essentials Oils [in Russian], Alma-Ata (1962).