

ESSENTIAL OILS OF *Pimpinella squamosa*

N. P. Mekhtieva

UDC 547.913

Continuing a study of the essential oil content of species of the genus *Pimpinella* L., fam. Apiaceae Lindl., of the flora of Azerbaidhan [1, 2] we have investigated the essential oils from *Pimpinella squamosa* Karjag.

The essential oils (EOs) for analysis were obtained by steam distillation [3] both from whole plants and from individual organs of *P. squamosa* gathered in the flowering–fruit-bearing phase in the Babekskii and Sharurskii regions of the Nakhchyvan Autonomous Republic (AR). The EO from the whole plants was a bright yellow transparent liquid with a sweet taste and a characteristic spicy smell. Its physicochemical constants were determined as in [4]: acid No. 2.81; ester No. 22.44; $d_{26}^{26} - 0.9763$; $n_D^{20} - 1.543$. The mean concentrations of EO were as follows: in the whole plants, from 0.51 to 0.93%; in the epigeal parts, from 0.94 to 1.76%; in the stems and leaves, from 0.17 to 0.29%; in the flowers, from 1.13 to 1.43%; and in the fruit, from 4.60 to 7.00% of the dry weight of the raw material.

The component compositions of the EOs were determined by GLC without preliminary separation into fractions, using the same conditions as in [1, 2].

In the EO from the whole plants we detected 21 components, of which 8.4% consisted of monoterpene hydrocarbons (%): α -thujene, 0.2; α -pinene, 3.8; camphene, 0.9; α -terpinene, 1.1; and limonene, 2.4. Oxygen-containing compounds amounted to 85.7%, including (%): *p*-cymene, 0.2; linalool, 1.9; α -terpineol, 1.3; fenchone, 1.7; methylchavicol, 1.9; *cis*-anethole, 2.5; *trans*-anethole, 54.5; anisaldehyde, 6.0; anisic acid, 5.4; eugenol, 4.5; isoeugenol, 4.0; thymol, 1.8; and a total of 5.9% of unidentified components (15, 16, 17, 23, and 24; Fig. 1a).

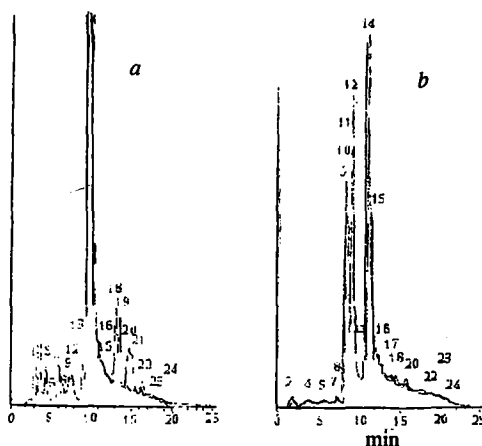


Fig. 1. GLC of the essential oil from whole plants (a) and the fruit (b) of *Pimpinella squamosa*: 1) α -thujene; 2) α -pinene; 3) camphene; 4) α -terpinene; 5) limonene; 6) *p*-cymene; 7) linalool; 8) α -terpineol; 9) fenchone; 12) methylchavicol; 13) *cis*-anethole; 14) *trans*-anethole; 18) anisaldehyde; 19) anisic acid; 20) eugenol; 21) isoeugenol; 22) thymol; 10, 11, 15, 16, 17, 23, and 24) unidentified components.

In the EO from the fruit we recorded 19 components. Only 0.7% consisted of monoterpene hydrocarbons, including (%): α -pinene, 0.3; α -terpinene, 0.2; and limonene, 0.2. Oxygen-containing compounds amounted to 70.3% of the composition of the oil, including (%): linalool, 0.7; α -terpineol, 0.2; fenchone, 11.5; methylchavicol, 16.5; *cis*-anethole, 5.0; *trans*-anethole, 29.5; anisaldehyde, 4.0; eugenol, 2.5; and thymol 0.4, with a total of 29.0% of unidentified components (10, 11, 15, 16, 17, 23, and 24; Fig. 1b).

The essential oil of *P. squamosa* possesses antimicrobial activity with respect to a number of pathogenic microorganisms but is not toxic in a dose of 3.4 g/kg weight of an animal and is promising for further study as an antibiotic.

REFERENCES

1. N. P. Mekhtieva, *Khim. Prir. Soedin.*, 288 (1991).
2. N. P. Mekhtieva, *Khim. Prir. Soedin.*, 904 (1993).
3. A. S. Ginsberg, *Khim-Farm. Prom-st'*, No. 8-9, 326 (1932).
4. K. G. Persidskaya and A. P. Chipiga, *Handbook for Laboratory Workers of Essential-Oil Enterprises [in Russian], Legkaya i Pishchevaya Prom-st'* (1981).