5. M. O. Karryev, *The Pharmacochemistry of Some Essential-Oil Plants of the Flora of Turkmenia* [in Russian], Ashkhabad (1973).
6. M. I. Goryaev, L. P. Gratsianskaya, and L. N. Lishtvanova, *Izv. Akad. Nauk KazSSR, Ser. Khim. Nauk* **2**, 75 (1964).
7. A. S. Ginzberg, Khim-farm. Prom-st., No. 8-9, 326 (1932).
8. M. Tulyaganova, *Determinative Handbook of the Plants of Central Asia* [in Russian], Vol. 9, Tashkent (1987), p. 155.
9. K. G. Tkachenko and I. G. Zenkevich, *Rast. Res.* **23**, 87 (1987).
10. Kh. K. Dzhumaev, K. G. Tkachenko, I. G. Zenkevich, and I. A. Tsibul'skaya, *Rast. Res.* **24**, 259 (1988).

ESSENTIAL OIL OF THE LEAVES OF *Hyssopus seravschanicus* FROM SOUTH UZBEKISTAN

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Hyssopus seravschanicus (Dubjan.) Pazij is a semishrub of the family Lamiaceae. In the essential oil of *H. seravschanicus* 29 substances have been identified [1].

The raw material for investigation was collected in 1986 in the environs of the village of Khandiza (Surkhandar'ya province, Uzbek SSR, spur of the Hissar range, southwestern Pamir-Alai) at heights of 1550-1700 m above sea level. The essential oil was distilled from the freshly gathered raw material in a Ginzberg apparatus [2]. The component composition and quantitative amounts of the components of the essential oil of the leaves gathered in the vegetation phase were determined.

The essential oil was chromatographed without preliminary separation into fractions. Mass spectra were recorded on an LKB-2091 chromato-mass spectrometer using a 2 mm × 1.8 m filled glass column with 2% of the polydimethylsiloxane elastomer SE-30 on Chromosorb W. Spectra were recorded at an ionization energy of 70 eV. Analysis was performed in the regime of programming the temperature from 40 to 200°C at the rate of 5°C/min.

The quantitative analysis of the essential oil was carried out on a Biokhrom-1 chromatograph with a flame-ionization detector using a 0.25 mm × 50 m glass capillary column with the polydimethylsiloxane stationary phase OV-101 in the regime of programming the temperature from 40 to 200°C at the rate of 2-3 deg/min. The linear rate of flow of the carrier gas (helium) was 8-15 cm/sec. The temperature of the evaporator was 220°C and the flow split 1:110. Areas were recorded with a TR-2213 electronic integrator (Japan). The minimum detectable relative amount of a component at a dose of 0.2-0.4 μl was 0.1% [3, 4].

The yield of the essential oil from the leaves of *H. seravschanicus* amounted to 0.34% on the weight of the raw material, which was only half that given in the literature [5].

The results of the investigation of the component composition and the determination of the quantitative analysis of the substances in the essential oil of the leaves of *H. seravschanicus* are given in Table 1 and are shown to two significant figures since the reproducibility of these magnitudes was ±10 rel. % for the main components and ±50 rel. % for the trace components.

On analyzing the literature figures [1] and our results, we came to the conclusion that the samples of the essential oils of *H. seravschanicus* that were investigated differed not only between component composition but also in the quantitative amounts of individual substances.* The differences are possibly connected with the growth sites of the specimens, the phase of development, and the year of collection.

*We were unable to detect a number of substances isolated by Zotov et al. [1].

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TABLE 1. Composition of the Essential Oil of *H. seravschanicus*

Compound	Amount, %	Retention index	Results of [1]
α-Thujone	+*	922	—
α-Pinene	0,2	929	1,8
Camphene	+*	943	—
Sabinene	1,3	964	16,3
β-Pinene	8,6	968	0,5
Myrcene	1,0	981	5,3
p-Cymene	1,3	1011	2,8
1,8-Cineole	6,4	1020	—
Ocimene X (cis)	1,4	1025	—
Ocimene Y (trans)	0,7	1036	—
γ-Terpinene	0,2	1048	3,5
Linalool	+*	1090	—
Unidentified, M 116	0,6	1138	—
Pinocamphone	71,0	1150	23,0
Unidentified	3,4	1166	—
Unidentified	0,2	1172	—
$C_{10}H_{16}O$	0,2	1222	—
$C_{10}H_{16}O$	0,1	1241	—
Thymol	0,2	1263	1,7
Carvacrol	1,6	1278	1,2
Unidentified	0,6	1305	—
$C_{15}H_{24}$	+*	1382	—
Caryophyllene	0,3	1414	—
$C_{15}H_{24}$	0,2	1473	—
$C_{15}H_{24}$	+*	1488	—
$C_{15}H_{24}$	0,1	1562	—
α-Terpinene	—	—	0,8
Limonene	—	—	13,8
Terpinolene	—	—	0,7
Fenchone	—	—	0,5
Menthone	—	—	1,1
Isopinocamphone	—	—	12,1
Verbenone	—	—	3,7
Pinocampheol	—	—	2,2
Isopinocampheol	—	—	3,4
Acetic acid	—	—	
Propionic acid	—	—	
Butyric acid	—	—	
Isobutyric acid	—	—	
Caproic acid	—	—	
Enanthic acid	—	—	
Caprylic acid	—	—	0,91
Isocaprylic acid	—	—	
Pelargonic acid	—	—	
Capric acid	—	—	

*Substance present in the amount of less than 0.1%.

LITERATURE CITED

1. E. P. Zotov, M. I. Goryev, F. S. Sharipova, R. A. Khazanovich, and V. I. Vandysheva, *Khim. Prir. Soedin.*, 101 (1974).
2. A. S. Ginsberg, *Khim.-farm. Prom.*, No. 8-9, 326 (1932).
3. K. G. Tkachenko and I. G. Zenkevich, *Rast. Res.* **23**, 87 (1987).
4. Kh. K. Dzhumaev, K. G. Tkachenko, I. G. Zenkevich, and I. A. Tsibul'skaya, *Rast. Res.* **24**, 259 (1988).
5. K. D. Dzhumaev, *Maslo-Zhir. Prom.*, No. 12, 22 (1981).