COMPOSITION OF THE ESSENTIAL OIL OF Thymus krylovii

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The voluminous genus Thymus L., family Labiatae, is represented by more than 180 species on the territory of the USSR [1]. About 20 species are found on the territory of Siberia, some of which have been isolated into independent [sic] and some are polymorphic Thymus sepyllum L. In spite of this diversity of species composition, only two species are used in officinal medicine: Th. serpyllum L. and Th. marschallianus Wild., which are gathered in the European part of the USSR. The therapeutic effect of thyme preparations is due primarily to the action of the components of the essential oil [2]. There is information on the chemical composition of the essential oil of Th. marschallianus Wild. and isolated results on the components of the essential oil of Th. serpyllum L. [3].

In the present paper we give the results of an investigation of the chemical composition of the terpenoids of the essential oil obtained by the steam-distillation method from the epigeal part of Th. krylovii Byczenn., collected in the environs of Minusinsk, Krasnoyarskii krai. The oil consisted of a clear mobile liquid with burning taste having the characteristic odor of thymol.

Acids (0.04%) were isolated with a saturated solution of sodium hydrogen carbonate, and phenols (7.52%) with a 5% solution of caustic soda. The phenolic fraction of the essential oil consisted of thymol (92.2%) and carvacrol (7.8%).

Separation of the terpene material in a fractionating column (40 theoretical plates) gave a number of fractions from which, by chromatography on silica gel (ratio 1:30), β-myrcene, γ-terpinene, camphor, borneol, α-terpineol, thymol, and sabinene hydrate were isolated in the individual form. By chromatography on silica gel the still residue gave a mixture of sesquiterpenes and bornyl acetate, thymol, and caryophyllene oxide. Rechromatography of the sesquiterpenes on silica gel impregnated with 20% silver nitrate led to the isolation of δ-cadinene, γ-cadinene, γ-muurolene, δ-bisabolene, ε-cadinene, α-farnesane, and caryophyllene. All the components isolated were identified by their PMR spectra (Varian HA-56/60, CCl_3). The quantitative analysis of the essential oil was carried out on a Chrom-41 instrument (glass capillary column 49 m long, polymethylsiloxane) by the method of simple standardization.

The amounts of 27 components were determined (%): tricyclene, 1.8; α-pinene 4.1; camphene 2.8; sabinene 1.4; β-pinene 1.6; β-myrcene 9.4; α-terpinene 0.3; p-cymene 17.5; limonene 7.5; α-phellandrene 0.3; γ-terpinene 26.2; linalool 0.4; terpinolene 0.6; camphor 2.7; borneol 1.5; terpineol-4 0.8; α-terpineol 6.0; thymol 3.9; bornyl acetate 0.2; caryophyllene 5.3; β-bisabolene 1.1; δ-cadinene 0.3; α-farnesene 1.9; and caryophyllene oxide 0.7; and γ-cadinene, γ-muurolene, and ε-cadinene in trace amounts (less than 0.1%).

The composition of the essential oils of Th. krylovii Byczenn. that we studied is close to those of officinal species of thyme, which shows that the Siberian populations of Krylov's thyme can be recommended as an additional source of raw material for medicine.

LITERATURE CITED

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