A STUDY OF THE ESSENTIAL OIL OF ARTEMISIA TAURICA

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The present communication gives the results of a study of the essential oil of the epigeal part of Artemisia taurica Willd., growing in the neighborhood of Makhachkala. The plant material was collected and identified by E. M. Shiffers over four years (the plant was collected during September and October in the flowering phase). The yield of essential oil was 0.65–1.15%. The physicochemical constants of the oil were: d^{20} 0.9128–0.9217; n_D^{20} 1.4600–1.4644; α_D −6.40 to −17.00°; A. No. 0.89–1.73; E. No. 5.93–23.58; OH 0.13–1.21%.

The essential oil was separated into monoterpene and sesquiterpene fractions by repeated vacuum distillation. Individual components were isolated by repeated chromatography of the fractions on alumina, IR spectroscopy being used to check the separation of the complex mixtures and also (together with other methods) to identify the individual compounds.

It was found that the monoterpene fraction of the essential oil (16.6%) contained 1,8-cineol (adduct with resorcinol, mp 84–85° C), camphene (dehydration product, isoborneol), myrcene (product of the saponification of the adduct with maleic anhydride, mp 120° C), p-cymene, and an unidentified compound whose IR spectrum had an absorption band at 1600 cm^{-1}. According to GLC (PEG-400 and dicyanodiethyl ether), this fraction contained, in addition to the compounds mentioned above, small amounts if α- and β-pinenes.

The main component of the essential oil of A. taurica (~50%) is α-thujone (isolated by chromatography on neutral Al_2O_3) with bp 44° C (2 mm), d_4^{20} 0.9212; n_D^{20} 1.4545; α_D −19.00°.

The semicarbazone of α-thujone was obtained with mp 185° C. The IR spectrum of the ketone was identical with that of thujone [1].

From the sesquiterpine fraction of the essential oil we isolated farnesene and a hydrocarbon with α_D −162.8° which was first detected by Pigulevskii and Kovaleva [2] in the essential oil of A. taurica. Apparently this hydrocarbon is also present in the essential oil of the fruit of Transcaucasian libanotis [3].

In addition, the presence in the ethereal oil of small amounts of sabinol, α-castol, and α-betulenol is assumed.

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