

NMR spectra with umbelliferone β -D-apiosyl-(1 \rightarrow 6)- β -D-glucopyranoside, which has been isolated previously from Ph. sibiricus growing in the environs of Ulan-Bator [5].

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*As in Russian. It is not clear as to how the reference should read - Editor.

COUMARINS OF *Artemisia vulgaris*

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We have analyzed the epigeal and hypogeal parts of *Artemisia vulgaris* L. (mugwort wormwood), collected in the environs of Tomsk in the budding phase.

The comminuted raw material was extracted with 96% ethanol, and the ethanolic extract was concentrated in vacuum and diluted with water (1:1). The precipitate that deposited was separated off, and the filtrate was treated with chloroform. The resin remaining after the solvent had been evaporated off was subjected to preparative chromatography on "Leningradskaya S" (medium) paper impregnated with a mixture of formamide and acetone (1:3) [1]. Separation of the combined substances by descending chromatography in chloroform gave coumarin, scopoletin, and umbelliferone.

The further separation of the combined coumarins was performed by preparative rechromatography on "Leningradskaya S" paper that had been washed with a 5% solution of Trilon B and with distilled water and had been impregnated with 10% dimethylformamide in methanol, with butan-1-ol-acetic acid-water (4:1:5) as the mobile phase (system 1) [2], and on Silufol plates with the mobile phases ether-petroleum ether (3:1) (system 2) and hexane-ethyl acetate (3:1), acidified with acetic acid (system 3).

The substances were eluted from the chromatogram with 96% ethanol, and were obtained in the individual form of recrystallization from methanol.

From mugwort wormwood we isolated 18 substances of coumarin nature, and of them, on the basis of IR and UV spectra and mixed melting points with authentic samples we identified esculin, esculetin, umbelliferone, scopoletin, and coumarin. An analysis of the available literature showed a distinct concentration of scopoletin in the genus *Artemisia* [3].

The qualitative compositions of the coumarins from the epigeal and hypogeal parts of the plant in the budding phase were identical.

The amount of coumarins in the epigeal part of the plants was 1.9%, and that in the hypogeal part 1.2%. The determination was made by photoelectric colorimetry [4].

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