

COMPONENTS OF *Achillea filipendulina*

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We have investigated for their lactone content the roots of *Achillea filipendulina* (fernleaf yarrow), family Compositae, collected in the mountains of the Tien-Shan (Chatkal'skii range) in the fruit-bearing period of the plant.

The air-dry raw material was extracted with methanol, the extract was concentrated, and it was diluted with an equal volume of water and filtered. The aqueous methanolic filtrate was treated with chloroform and was then evaporated to dryness. The yield of extractive substances was 0.3%. The resin was separated by column chromatography on silica gel (type KSK, 200 nm).

Elution of the column with benzene-chloroform (9:1) yielded a crystalline substance (I) with the composition $C_{11}H_{10}O_4$, mp 144-145°C, R_f 0.61 [here and below, in the benzene-methanol (9:1) system]. On the basis of UV and IR spectra and a mixed melting point with an authentic sample substance (I) was identified as scoparone [1]. When the column was eluted further with chloroform-ether (1:1) another two crystalline substances were obtained with the compositions $C_{10}H_8O_4$, mp 201-202°C, R_f 0.32 (II), and $C_{11}H_{10}O_5$, mp 145-146°C, R_f 0.31 (III). Both substances have a phenolic nature and dissolve in aqueous solutions of alkalis. According to their spectral characteristics and chemical properties, they are hydroxycoumarins.

From its IR spectrum, melting point, and a mixed melting point with an authentic sample, substance (II) was identified as scopoletin, and substance (III) as isofraxidin. This is the first time that these substances have been isolated from *Achillea filipendulina*.

LITERATURE CITED

1. G. A. Kuznetsova, Natural Coumarins and Furocoumarins [in Russian], Leningrad (1967).

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