

On studying the roots of *Ferula copetdaghensis* Eug. Kor. collected in the western Kopet-Dagh at the end of May, we found in them a considerable amount of coumarins represented by a mixture of six components with R_f 0.18, 0.29, 0.33, 0.49, 0.68, and 0.72 [n-hexane-benzene-methanol (5:4:1) system]. To isolate them, the dried and comminuted raw material was treated with methanol. The extract was concentrated to small volume and diluted with water, and the mixture was extracted with ether. The ethereal solution was washed with 10% sodium carbonate solution, and the substance with R_f 0.18 passed into this. The aqueous phase was acidified, the liberated acids were extracted with ether, and the solvent was distilled off. This gave an oily mass (2.77% of the weight of the initial raw material). The recrystallization of this mass from diethyl ether-petroleum ether (1:1) gave a colorless crystalline substance with mp 94-96°C, $[\alpha]_D^{24} -25^\circ$ (c 1.0; chloroform) which, according to its UV spectrum (λ_{\max} 327 nm, $\log \epsilon$ 4.34) and its IR spectrum (1715, 1732, 1625, 1560, 1520, and 1480 cm^{-1}) is a coumarin.

On treatment with sodium carbonate, the lactone passed into the aqueous solution, and on subsequent acidification it separated out in the unchanged state, while with lead acetate it gave a precipitate of the water-insoluble lead salt. These properties, the broad carbonyl band in the IR spectrum, and also the formation of an ethyl ester with mp 74-75°C show that the substance contains a carboxy group. Cleavage with a mixture of acetic and sulfuric acids formed umbelliferone.

On the basis of its IR and NMR spectra, a mixed melting point with an authentic sample, and its physical constants, the substance isolated was identified as galbanic acid, which has been found previously in a number of representatives of the genus *Ferula* [1-3].

LITERATURE CITED

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