

A report has been made previously [1] of the sesquiterpene lactones of the resin from the roots of *Ferula litwinowiana* K.-Pol. In the present paper we give the results of an investigation of the minor components of this plant raw material.

The fractions eluted from a chromatographic column of alumina by hexane-chloroform (7:1) yielded a crystalline substance with the composition $C_{19}H_{20}O_4$, mp 99-100°C (from aqueous ethanol) which, according to its IR spectrum (1718, 1670, 1530, 1618, 1512 cm^{-1}) and its NMR spectrum (singlets of vinyl methyl groups at 1.96, 2.06, and 2.24 ppm; triplets of methylene groups at 3.12 and 4.28 ppm; singlets of two olefinic protons in a side chain at 6.08 and 6.20 ppm; and signals of a 7-substituted coumarin nucleus - singlet at 6.84 ppm (1 H), doublets at 6.24 (1 H, $J = 10$ Hz), 7.36 (H, $J = 8.5$ Hz), and 7.64 ppm (1 H, $J = 10$ Hz), and a quartet at 6.88 ppm (1 H, $J = 8.5$; $J = 2$ Hz) - were assigned to the umbelliferone ethers.

Acid hydrolysis of the substance formed umbelliferone and a monoterpene ketol with the composition $C_{10}H_{16}O_2$.

A comparison of physicochemical properties and the NMR spectrum of the compound under investigation with those of diversin [2, 3] showed their identity.

From the fractions eluted by chloroform we isolated a substance $C_9H_6O_3$, mp 227-229°C (from water), which was identified from its IR and NMR spectra as umbelliferone [4].

In addition to coumarin derivatives, from the resin of the roots of *F. litwinowiana* we isolated and identified the sesquiterpene lactones diversolide (malaphyll) and talassin A.

IR spectra were taken on a UR-20 spectrophotometer in paraffin oil and NMR spectra on a Varian HA-100D spectrometer ($CDCl_3$, 0 - TMS).

LITERATURE CITED

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