The phenomenon studied may subsequently find use for detecting pyrogenic substances in various media.

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COUMARINS OF THE ROOTS OF *Ferula iliensis*

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Continuing a study of coumarins of plants of the genus *Ferula* [1], we have investigated the roots of *Ferula iliensis* Krasn. collected in the Alma-Ata oblast of the Kazak SSR.

A concentrated methanolic extract of the roots was diluted with water (1:2) and treated with diethyl ether. The ether extract was washed with 3% sodium carbonate solution and the aqueous washings were acidified with 10% sulfuric acid and shaken with ether. Elimination of the solvent yielded crystals of substance (I) with the composition $C_9H_6O_3$, mp 229-232°C.

The mother ethereal solution was concentrated, 30 g of the extract was deposited on a column (93 × 4 cm) of silica gel (900 g) and elution was carried out with hexane–ethyl acetate (9:1) and the mixtures of the same solvents with increasing concentrations of ethyl acetate. This yielded four crystalline coumarin derivatives: (II), $C_{24}H_{30}O_3$, mp 60-61°C; (III), $C_{24}H_{30}O_4$, mp 189-190°C; (IV), $C_{24}H_{30}O_4$, mp 78-80°C; (V), $C_{24}H_{32}O_4$, mp 141-142°C.

By a comparison of IR and NMR spectra and mixed melting points with authentic samples, substances (I)-(V) were identified as umbelliferone, umbelliprenin [2], kamolone [3], moschatol [4], and kamolol [5], respectively.

It must be mentioned that umbelliferone derivatives have also been isolated previously from giant fennels of the Pachycarpa group [6], of which *Ferula iliensis* is also a representative [7].

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