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TERPENOIDS OF *Ferula litwinowiana*

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We have investigated the roots of the giant fennel *Ferula litwinowiana* K. Pol. (fam. Apiaceae) gathered in the classic habitat of the plant — the Kyzylkum sands, close to Zarafshan, Navoiiskaya oblast of Uzbekistan [1].

The comminuted air-dry roots were extracted three times with ethanol. After elimination of the solvent, the extract was diluted with water in a ratio of 1:2 and treated with ethyl acetate. By distilling off the extractant, a light brown mixture of extractive substances was obtained, 20 g of which was transferred to a column (3 × 100 cm) containing KSK silica gel. The substances were eluted with petroleum ether—ethyl acetate (19:1) with a subsequent increase in the concentration of the latter. Fractions with a volume of 100 ml were collected.

As a result of chromatographic separation when the column was eluted with petroleum ether—ethyl acetate in ratios of 9:1, 8:1, 7:1, and 6:1, four compounds of coumarin nature were isolated: 1 —$C_{24}H_{28}O_4$, mp 142-143°C, M^+ 380; 2 — $C_{24}H_{30}O_4$, mp 137-138°C, M^+ 382; 3 — $C_{24}H_{30}O_4$, mp 116-117°C, M^+ 382; 4 — $C_{24}H_{32}O_4$, mp 176-177°C, M^+ 400. By a comparison of physicochemical constants and spectral characteristics (IR, NMR, and mass spectra), substances (**1**—**4**) were identified as conferone [2], conferol [3], moschatol [4], and samarcandin [5], respectively.

On continuing elution of the column with petroleum ether—ethyl acetate (5:1) and (4:1), another two compounds of lactone nature were isolated: substances (**5**) with the composition $C_{25}H_{30}O_7$, mp 188—191°C, and (**6**), composition $C_{24}H_{30}O_7$, mp 205—208°C. From their compositions and physicochemical characteristics and also from their IR and PMR spectra, these substances were identified as talassin A and talassin B, respectively, which have previously been isolated from *Talassia transiliense* Korov. and *Ferula olgae* Regel et Schalh. [6, 7].

The triterpenoid coumarins diversin and *trans*-diversin and the sesquiterpene lactones talassin A, malaphyll, and malaphyllin have been isolated from the roots of *Ferula litwinowiana* previously [8—10].

REFERENCES

1. *Determinative Handbook of the Plants of Central Asia* [in Russian], Fan, Tashkent, Vol. VII (1983), p. 291.
2. V. V. Vandyshev, Yu. E. Sklar, M. E. Perel'son, M. D. Moroz, and M. G. Pimenov, *Khim. Prir. Soedin.*, 669 (1972).
3. V. V. Vandyshev, Yu. E. Sklar, M. E. Perel'son, M. D. Moroz, and M. G. Pimenov, *Khim. Prir. Soedin.*, 670 (1972).
4. Yu. E. Sklar, M. E. Perel'son, and M. G. Pimenov, *Khim. Prir. Soedin.*, 428 (1973).
5. A. I. Saidzhodzhaev and V. M. Malikov, *Khim. Prir. Soedin.*, 707 (1978).
6. E. Yu. Kiseleva, O. A. Konovalova, and K. S. Rybalko, *Khim. Prir. Soedin.*, 668 (1971).
7. O. A. Konovalova, A. I. Ban'kovskii, and K. S. Rybalko, *Khim. Prir. Soedin.*, 651 (1972).
8. V. Yu. Bagirov, V. I. Sheichenko, N. F. Mir-Bobaev, and M. G. Pimenov, *Khim. Prir. Soedin.*, 114 (1984).
9. N. F. Mir-Bobaev and S. V. Serkerov, *Khim. Prir. Soedin.*, 110 (1986).
10. S. V. Serkerov an N.F. Mir-Bobaev, *Khim. Prir. Soedin.*, 360 (1987).

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