

COUMARINS OF *Zosima korovinii*

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UDC 547.9:582.80

We have studied *Zosima korovinii* M. Pimen. (*Z. tordyloides* Auct.) a species endemic to the Tien Shan and the northern Pamir-Alai [1], collected in 1971 in the upper reaches of the R. Dzhumal (Central Tien Shan, Kirghizia).

As the result of the chromatography of a petroleum ether extract of the roots on silica gel L 40–100 μ in the petroleum ether–ethyl acetate system, two substances were isolated: (I), $C_{19}H_{20}O_5$, mp 78–80°C, $[\alpha]_D^{17} -134^\circ$ (c 1.0; $CHCl_3$); and (II), $C_{19}H_{20}O_5$, mp 119–120°C, $[\alpha]_D^{20} +23^\circ$ (c 1.0; dioxane). It follows from the PMR spectrum of substance (I) (Varian HA-100D, $CDCl_3$, 0 – HMDS, 20°C, δ , ppm) that it is a linear dihydropyranocoumarin (H_3 , 5.97, d, $J = 9.5$ Hz, H_4 , 7.32, d, $J = 9.5$ Hz; H_5 , 6.90, s; H_3' , 4.89, t, $J = 5$ Hz; $H_4'a$ 2.64, q, $J_1 = 16$ Hz, $J_2 = 5$ Hz; $H_4'b$, 3.02, q, $J_1 = 16$ Hz, $J_2 = 5$ Hz; 2 CH_2 , 1.14, s) having an angeloyloxy group in position 3 (2 CH_3 , 1.61, 1.69, m; $CH=C$, 5.85, m), i.e., agasyllin [2–4]. Substance (II) is angular dihydrofurocoumarin (H_3 , 5.95, d, $J = 9.5$ Hz; H_4 , 7.37, d, $J = 9.5$ Hz; H_5 , 7.0, d, $J = 8$ Hz; H_6 , 6.44, d, $J = 8$ Hz; $CH-CH_2-Ar$, 3.14, d, $J = 8.5$ Hz; $O-CH-CH_2$, 4.89, t, $J = 8.5$ Hz; 2 CH_3 , 1.35 and 1.39, s) – the angelate (2 CH_3 , 1.42 and 1.65, m, $CH=C$, 5.7, m) of columbianetin [5] (zosimin [6]).

Dihydrocoumarins have not previously been isolated from Umbelliferae of the tribe Pastinaceae K.–Pol. emend. Manden., representatives of which are characterized by the capacity for biosynthesizing furo- and dihydrofurocoumarins. The agasyllin from *Z. korovinii* – the first example of this type – is interesting from the point of view of chemosystematics.

LITERATURE CITED

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