TERPENOID COUMARINS OF Ferula linczewskii

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Ferula linczewskii Korov. is an endemic wild plant of Yuzhnyu Pridarvaz' (Eastern Tadzhikistan) growing only in the region of Kukhi-Frush in the Khozretisho range.

The dried comminuted roots of the plant collected in the environs of the settlement of Vuadil' and Oin-Garan at a height of 2530 m above sea level on August 5, 1975 were extracted with acetone and the extract was evaporated and chromatographed on alumina (activity grade II). On elution with mixtures of petroleum ether and ethyl acetate with increasing concentrations of the latter, four crystalline substances were isolated.

Substance (I),  $C_{26}H_{32}O_5$ , mp 174-176°C,  $[\alpha]_D^{21}$  -40.7° (c 0.72; CHCl<sub>3</sub>), according to the PMR spectrum (Varian HA-100, CDCl<sub>3</sub>, 0 - HMDS), contained three methyl groups (1.86, 1.88, and 1.91 ppm, s, 3H each), a methylenedioxy group (4.21, m, 2H), an acetoxy group (2.08, s, 3H) attached to CH (4.72, m, 1H), and an exocyclic methylene group (4.94, s,  $W_{1/2} = 4.0$  Hz, 1H; 4.57, s,  $W_{1/2} = 4.0$  Hz, 1H). According to its PMR and IR spectra, (I) was identified as badrakemin acetate [1].

<u>Substance (II)</u>,  $C_{24}H_{28}O_4$ , mp 186-188°C,  $[\alpha]_D^{21}$  -41.1° (c 0.74; CHCl<sub>3</sub>) had a PMR spectrum similar to that of (I) with the difference that it lacked the signals of the acetoxy group and of the proton geminal to it. According to its PMR and IR spectra, (II) is badrakemone [1].

<u>Substance (III)</u>,  $C_{24}H_{30}O_4$ , mp 196-198°C,  $[\alpha]_D^{21}$  -55.6° (c 0.72; CHCl<sub>3</sub>), gave a PMR spectrum similar to that of (I) but it contained a hydroxy group in place of the acetoxy group (CH-OH, 3.46, m, 1H). According to its IR and PMR spectra, substance (III) was identical with badrakemin [1].

<u>Substance (IV)</u>,  $C_{24}H_{30}O_4$ , mp 159-160.5°C  $[\alpha]_D^{24}$  -55.3° (c 0.90; CHCl<sub>3</sub>), contains three methyl groups (1.80, 1.97, and 2.02, s, 3H each), a methylenedioxy group (4.02, q, J<sub>1</sub> = 10.0 Hz, J<sub>2</sub> = 6.0 Hz, 1H; 4.31, q, J<sub>1</sub> = 10.0 Hz, J<sub>2</sub> = 6.0 Hz, 1H), a CH-OH group (3.27, m,  $\Sigma J = 18.0$  Hz, 1H), and an exocyclic ethylene group (4.82, m, 1H; 4.72, m, 1H). These results identify (IV) as farnesiferol A [2, 3].

Thus, F. linczewskii contains substances similar to thos isolated from F. samarcandica, F. nevskii, and F. badrakema [1, 4, 5].

## LITERATURE CITED

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