FLAVONOIDS FROM Primula turkestanica

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We have previously [1] reported the isolation from the leaves of Primula turkestanica of a new flavonol glycoside – primflaside.

Together with primflaside, from a column of polyamide we have obtained a flavonoid with the composition $C_{15}H_{10}O_7$, mp 303-305°C (Kofler block), R_f 0.28 (60% acetic acid solution); acetate with mp 195-197°C. UV spectrum: $\lambda_{max}^{CH_3OH}$ 257, 368 nm.

The constants of this compound correspond to those for quercetin, as was confirmed by a direct comparison with an authentic sample. From the white floury coating of the leaves, peduncles, and flowers, by dissolution in boiling methanol and precipitation in water with subsequent fractional crystallization from petroleum ether (70-100°C) and from methanol we have isolated two flavonoids (F-1 and F-2).

Flavonoid F-1 forms small white needles with the composition $C_{15}H_{10}O_2$, mp 93-95°C, R_f 0.84 [chloroform–methanol (9:1)], 0.53 [diethyl ether–chloroform (8:2)]; 0.06 [petroleum ether (70-100°C) –diethyl ether (8:2)]. The plates were of Silufol UV-254, and the spots were revealed with iodine vapor. In the NMR spectrum of F-1 in deuteroacetone, a singlet at δ 6.74 ppm corresponds to H-3 and a multiplet in the δ 7.2-8.2 ppm region to nine protons of a flavonoid. UV spectrum: $\lambda_{max}^{CH_3OH}$ 256, 295 nm; on the basis of its physicochemical constants, the substance was identified as flavone [2].

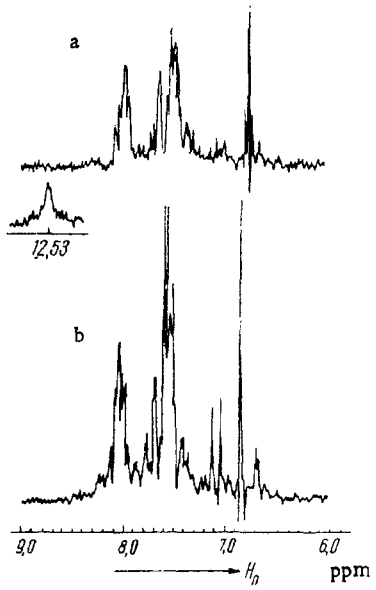

Fig. 1. NMR spectra in deuteroacetone: flavone (a) and 5-hydroxyflavone (b).

Flavonoid F-2 formed long yellow acicular crystals with the composition $C_{15}H_{10}O_3$, mp 148-150°C (mp of the acetate of F-2, 95-98°C), R_f 0.95 [chloroform–methanol (9:1)]; 0.66 [diethyl ether–chloroform (8:2)]; 0.25 [petroleum ether (70-100°C) –diethyl ether (8:2)]. The plates, of Silufol UV-254, were treated to reveal the spots with ammonia and iodine vapors. In the NMR spectrum (in deuteroacetone) a singlet at δ 6.84 ppm corresponds to H-3, a singlet at 12.53 ppm to the proton of a OH group connected by an intramolecular hydrogen bond with a carbonyl group, a multiplet at 7-8.20 ppm to eight protons (Fig. 1). UV spectrum: $\lambda_{max}^{CH_3OH}$ 258, 273 nm; $\lambda_{max}^{Zr(NO_3)_2}$ 292 nm. On the basis of these facts, substance F-2 was identified as 5-hydroxyflavone [3].

LITERATURE CITED

1. A. M. Zakharov, V. I. Glyzin, and A. I. Ban'kovskii, Khim. Prirodn. Soedin., 6, 472 (1970).
2. Z. P. Pakudina and A. S. Sadykov, The Distribution in Plants and the Physicochemical Properties of Flavones, Flavonols, and their Glycosides [in Russian], Tashkent (1970), p. 5.

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