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SONCHOSIDE — A NEW FLAVONOID GLYCOSIDE FROM *Sonchus arvensis*

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We have previously reported the isolation from the flowers of *Sonchus arvensis* (field sowthistle) of luteolin, cynaroside, isocynaroside, quercetin, quercimetrin, chrysoeriol, and isorhamnetin, and an isorhamnetin 3-glycoside [1-3]. Continuing our investigations of the flowers of this plant, we have isolated a flavonoid glycoside with the composition $C_{21}H_{20}O_{12}$, mp 240-243°C, $[\alpha]_D^{22}$ −59.6° (c 0.5; formamide), λ_{max} 266, 380 nm.

Hydrolysis of the glycoside yielded glucose, identified by paper chromatography, and an aglycone with the composition $C_{15}H_{10}O_7$, M^+ 302.

In the region of the signals of aromatic protons in the NMR spectra of the substance there was a singlet at 7.39 ppm, 1H, a singlet at 7.18 ppm, 1H, two doublets at 6.82 and 6.52 ppm, 1H each, J = 2.5 Hz, and a singlet at 6.62 ppm, 1 H. On the basis of the results of an analysis of these signals, it may be concluded that in the ring A of the flavonoid there are substituents in positions 5 and 7.

The 6.62 ppm singlet is due to a proton in position 3. Consequently, this compound belongs to the group of flavonoids in ring B of which there are three substituents, and their positions can only be 3', 4', and 6'. The substituents in positions 3', 4', 5, 6', and 7 are hydroxy groups, as follows from the absence of the signals of protons of other possible substituents. The mass spectrum of the aglycone, with a molecular weight M^+ 302, corresponds to the spectrum of hieracin, for which the structure of 3',4',5,6',7-pentahydroxyflavone has been proposed previously. We first isolated this compound from the flowers of mouse-ear hawkweed [4]. The carbohydrate component of the glycoside is present in position 7, as was established by UV spectroscopy. The glucose had the β configuration of the glycosidic center (doublet at 4.84 ppm, J = 7 Hz, in the NMR spectrum, and the ring is in the pyranose form.

Thus, the glycoside isolated from the flowers of the field sowthistle has the structure of 7-β-D-glucopyranosyloxy-3',4',5,6'-tetrahydroxyflavone.

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