FLAVONOIDS OF Senecio subdentatus. II.

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Continuing an investigation of the flavonoid composition of Senecio subdentatus L. D. B. [1], by adsorption chromatography on Kapron and preparative chromatography on paper we have isolated two individual substances: A and B.

Their positions on a chromatogram [in systems 1) butanol–acetic acid–water (4:1:2) and 2) 15% acetic acid] and Bryant's cyanidin reaction, show that the flavonoids under investigation are glycosides.

Substance A has the composition $C_{22}H_{23}O_{12}$, mp 250-252°C, $[\alpha]_D^{20}$ −40.5° (c 0.1; methanol). R_f 0.39/0.1 λ_{max} 373, 255 nm ($E_{1cm}^{1\%}$ = 342); on hydrolysis with 10% HCl it is split into isorhamnetin with mp 303-305°C (yield 67.5%) and glucose.

Substance B has the composition $C_{21}H_{20}O_{12}$, mp 247-248°C. $[\alpha]_D^{20}$ −52° (c 0.15; methanol), R_f 0.35/0.07, λ_{max} 375, 268, 256 nm ($E_{1cm}^{1\%}$ = 3.48); under the same conditions it is split into quercetin with mp 308-310°C (yield 68%) and glucose.

The percentage contents of the aglycones and also the ratios of the intensities of the absorption of the maxima of the first bands in the UV spectra of the glycosides and of their aglycones show that the substances are monosides.

It was established by a spectroscopic investigation in the UV region that in both glycosides the glucose is attached at C_7 [2]. IR spectrum of substance A, cm^{-1}: broad band at 3300-3450 (OH group), 2860-2950 ($-OCH_3$), 1665 (C = 0 of a γ-pyrone), 1600, 1510, 1450 (aromatic nucleus); bands at 900 and also at 1030, 1070, and 1090 show the presence of a β-glycosidic bond and the pyranose form of the sugar residue. This was confirmed by enzymatic cleavage with emulsin and by the calculated value according to Klyne [3] $[M]_D \cdot K_P = -104.2$.

IR spectrum of substance B, cm^{-1}: 3300–3480, 2930, 1658, 1610, 1530, 1480, 892, 1020, 1060, 1080. Glycoside B also underwent enzymatic hydrolysis with emulsin. $[M]_D \cdot K_P = -132.7$. On the basis of these facts it may be concluded that substance A is isorhamnetin 7-β-D-glucopyranoside, and substance B is quercetin 7-β-D-glucopyranoside.

LITERATURE CITED

1. T. K. Chumbalov, O. V. Fadeeva, and T. K. Nikishchenko, Khim. Prirodn. Soedin., 390 (1972).
2. V. I. Litvinenko and N. P. Maksyutina, Khim. Prirodn. Soedin., 420 (1965).
3. I. P. Kovalev and V. I. Litvinenko, Khim. Prirodn. Soedin., 233 (1965).

S. M. Kirov Kazakh Order of the Red Banner of Labor State University. Alma-Ata State Medical Institute. Translated from Khimiya Prirodnykh Soedinenii, No. 1, pp. 89-90, January-February, 1974. Original article submitted May 14, 1973.