QUERCETIN 3-SOPHOROSIDE FROM THE POLLEN OF Alnus glutinosa AND Fraxinus lanceolata

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From the pollen of Alnus glutinosa (L) Gaertn. (European alder) and the pollen of Fraxinus lanceolata (Borkn.) (green ash) collected in April, 1973, in the Poltava oblast by the chromatography of ethanolic extracts on a column of polyamide we have isolated a flavonoid glycoside with the composition $C_{27}H_{30}O_{17} \cdot H_2O$ having mp 192-195°C, λ_{max} 254, 263 (shoulder), 360 nm, with yields of 1.7% and 3.2%, respectively.

Hydrolysis of the glycoside with 2% hydrochloric acid led to an aglycone with the composition $C_{15}H_{17}O_7$, mp 304-307°C, which we identified as quercetin. The presence of D-glucose in the acid mother liquor was established by paper chromatography.

In the NMR spectrum of the trimethylsilyl ether of the glycoside there are the following signals: a quadruplet at 7.60 ppm, $J_1 = 9$ Hz, $J_2 = 2.5$ Hz (1H), H-6'; a doublet at 7.42 ppm, $J = 2.5$ Hz (1 H), H-2'; a doublet at 6.72 ppm, $J = 8$ Hz (1 H), H-5'; a doublet at 6.18 ppm, $J = 2.5$ Hz (1 H), H-8; a doublet at 6.06 ppm, $J = 2.5$ Hz (1 H), H-6; and two doublets at 5.40 and 5.08 ppm, $J = 7$ Hz, assigned to the signals of protons of the anomeric center of two molecules of glucose; the signals of the protons of the two glucose molecules (12H) are located in the 3.0-4.2-ppm region.

On exhaustive methylation of the glycoside followed by methanolysis, by the GLC method we identified the methyl glycosides of 2,3,4,6-tetramethylglucose and 3,4,6-trimethylglucose, which shows the 1 → 2 bond between the glucose molecules, i.e., the carbohydrate part of the glycoside is sophorose, and the substance that we have isolated is quercetin sophoroside.

The identity of the substance with quercetin 3-sophoroside was confirmed by a comparison of the IR, UV, and NMR spectra of the glycoside and a sample of quercetin 3-sophoroside which we isolated for comparison from the pollen of Betula alba (L) Viel. Quercetin 3-sophoroside was isolated previously from the pollen of B. alba by Hänsel and Hörhammer [1].

LITERATURE CITED

1. R. Hänsel and L. Hörhammer, Arch. Pharm., 287, 117 (1954).

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