

PHENOLIC COMPOUNDS OF THE BARK

OF *Salix alba* × *babylonica*

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In the bark of *Salix alba* L. × *babylonica* F. we have qualitatively established the presence of tanning substances of the mixed group of catechins, flavonoids, and phenolic glycosides [1, 2].

To isolate individual phenolic glycosides, the fresh bark with young branches (4.0 kg) collected in May in the region of the village of Belyi Ugol' near Essentuki was extracted with water (90–95°C) for 1 h three times. The aqueous extract (0.5 liter) was treated with a 10% aqueous solution of basic lead acetate to precipitate the tanning substances and the flavonoids and was filtered, and the filtrate was freed from the excess of lead ions with hydrogen sulfide. The total phenolic glycosides were obtained from the purified aqueous extract by exhaustive extraction with ethyl acetate, which was then evaporated under vacuum. The phenolic glycosides crystallized in the course of two or three days. The crystals were separated off, dissolved in a small amount of methanol, deposited on a column of cellulose (h 40 cm, d 7 cm) and eluted with butan-1-ol - xylene - water (2 : 8 : 8) with the collection of 50-ml fractions [3].

Fractions 24–35 yielded a substance with the composition $C_{15}H_{20}O_7$, mp 174–176°C (water-saturated ethyl acetate), $[\alpha]_D^{20} - 61^\circ$ (c 1.52; water), mp of the acetate 105–108°C (aqueous methanol), $[\alpha]_D^{20} - 35^\circ$ (c 1.15; chloroform). IR spectrum of the glycoside, cm^{-1} : 3270 (phenolic hydroxyl), 1085, 1060, 1020 (vibrations of the pyranose ring of a sugar), 895 (β -configuration of the glycosidic bond), 845 (1,4-disubstitution in a benzene ring). The products of the enzymatic hydrolysis of the glycoside with emulsin were found to contain 4-hydroxycinnamic acid with mp 116–118°C (diethyl ether), and D-glucose, which confirms the β -configuration of the glycosidic bond [4, 5]. On the basis of the facts given, the substance investigated was identified as 3-(4-hydroxyphenyl)prop-2-en-1-ol 1-O- β -D-glucopyranoside (triandrin) [5].

Fractions 42–50 yielded a compound $C_{15}H_{18}O_7$, mp 199–201°C (water-saturated ethyl acetate), $[\alpha]_D^{20} - 60^\circ$ (c 1.18; water); UV spectrum: λ_{max} 269 nm, λ_{max}^{NaOH} 270 nm, mp of the acetate of the glycoside 134–135°C (aqueous methanol), $[\alpha]_D^{20} - 22^\circ$ (c 1.09; chloroform). The phenolic glycoside isolated was saligenin 2-O- β -glucopyranoside (salicin) [6]. The total amount of phenolic glycosides in the bark of the plant was 3% [7] and the amount of tanning substances by the Levental' method 10% [8]. When an extract of the bark was chromatographed on paper in the BAW (40 : 12 : 28) system with markers (the total catechins of tea) and the chromatograph was then treated with a 1% solution of vanillin in concentrated HCl and with other reagents, the presence in them of four catechins was established: (\pm)-gallocatechin, (\pm)-catechin, (–)-epigallocatechin gallate, and (+)-epicatechin gallate [9].

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