FLAVONOIDS OF THE LEAVES OF *Hippophaë rhamnoides*

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We have investigated the flavonoid composition of the leaves of *Hippophaë rhamnoides* L. (common sea buckthorn) collected in the Selenginsk region of the Buryat ASSR.

The flavonoids were isolated in the following way: the comminuted leaves were extracted with 80% ethanol, the extract was evaporated until the solvent had been eliminated, the residue was mixed with water, the chlorophylls and other lipophilic substances that deposited were separated off, and the aqueous filtrate was additionally purified with chloroform.

In order to separate the flavonoids into groups, the aqueous solution was treated with ethyl acetate. The aqueous and ethyl acetate phases were evaporated, and the residues were chromatographed on a polyamide sorbent by the usual methods.

The aqueous fraction gave a flavonoid glycoside $C_{28}H_{32}O_{16}$ with mp 220-222°C, $[\alpha]^{20}_{D}$ $-104°.2$. On acid hydrolysis it split into the aglycone, $C_{16}H_{12}O_{7}$, with mp 305-306°C, showing an absorption band in the IR spectrum in the 2980 cm^{-1} region, which is characteristic for methoxy groups, and two sugars: L-rhamnose and D-glucose.

On the basis of the UV spectra of the glycoside and the aglycone taken with diagnostic [1] reagents, the presence of free phenol groups in them was established: in positions 4' and 5 in the glycoside and in positions 3,4',5, and 7 in the genin.

The demethylation of the aglycone with hydriodic acid in liquid phenol and acetic anhydride gave quercetin, $C_{15}H_{10}O_{7}$, with mp 309-311°C.

The facts given permitted the aglycone of the glycoside under investigation to be identified as isorhamnetin [3].

Analysis of the UV spectra of the substance under investigation and its aglycone showed that the hydroxy groups in positions 3 and 7 of the glycoside are substituted by sugar residues. To establish the nature of the sugar in position 7, alkaline hydrolysis [4] was performed, as a result of which L-rhamnose and isorhamnetin 3-O-β-D-glucopyranoside, $C_{22}H_{22}O_{12}$, with mp 166-169°C, $[\alpha]^{20}_{D}$ $-60°$ [5], were obtained. After the enzymatic hydrolysis of the glycoside with rhamnodiastase [3], isorhamnetin 7-O-α-L-rhamnopyranoside, $C_{22}H_{22}O_{11}$, with mp 118-119°C, $[\alpha]^{20}_{D}$ $-122°$, was isolated.

Thus, the structure of the diglycoside isolated can be represented as isorhamnetin 3-O-β-D-glucopyranoside 7-O-α-L-rhamnopyranoside.

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