A STUDY OF THE POLYPHENOL COMPOUNDS OF *Astragalus* SPECIES OF THE FLORA OF THE NORTHERN CAUCASUS AND UZBEKISTAN

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In a study of 12 species of *Astragalus* growing in the northern Caucasus and Uzbekistan, we have found flavonoid glycosides the aglycones of which are kaempferol, quercetin, and isorhamnetin. Of these, the most widespread are glycosides of quercetin(*Astragalus eximius* B g e, *A. lasiopetalus* B g e, *A. schrencianus* F. et M., *A. sieversianus* Pall., *A. turcestanus* B g e, *A. tschimganicus* M. P o p).

From the herb *Astragalus galegiformis* L., collected in the flowering period in the region of the town of Karachaev (Karachaev autonomous region) by extraction with 80% of ethanol, after purification and the transfer of the flavonoids into butyl acetate, we isolated three compounds. Compound (I), composition $C_{21}H_{20}O_{11}$, after purification on a column of Sephadex of type G-25 had the form of yellow needles with mp 178°C. UV spectrum: $\lambda_{max}^{C_2H_5OH}$ 351, 300 (sh.), 267 nm.

The acid hydrolysis of the substance formed an aglycone in a yield of 64% with mp 278°C (acetate with mp 181°C), which shows the presence of 1 mole of glucose, identified by TLC on cellulose in the ethyl acetate–pyridine–water (2:1:2) system.

The IR spectra of the aglycone and of the glycoside were identical, respectively, with those of kaempferol and kaempferol 3-β-D-glucopyranoside (astragalin) [1].

Substance (II) was isolated from the freshly gathered flowers by extraction with ethanol. After the concentration of the alcoholic extract and its purification with chloroform, the light-yellow precipitate was treated with dilute acetic acid and recrystallized from aqueous ethanol. This gave a flavonoid with mp 170°C. UV spectrum: λ_{max} 360 and 259 nm.

Its acid hydrolysis gave an aglycone with mp 304°C (acetyl derivative with mp 206°C), glucose, and rhamnose. Hydrolysis under mild conditions [3] led to the formation of rutinose. When the physicochemical properties of the glycoside and of the aglycones were compared with compounds described in the literature, it was seen that the compound isolated was identical with isorhamnetin L-rhamnopyranosyl-(1→6)-β-D-glucopyranoside [2].

Substance (III) is present in small amount in the leaves and the pericarp and is an isoflavone. Its structure is being studied.

When ethanolic extracts from the herb *Astragalus rubrivenosum* Gontsch. were concentrated, rutin was obtained with mp 190°C, and was identified on the basis of its hydrolysis products and bathochromy.

LITERATURE CITED

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