PHENOLIC COMPOUNDS OF *Astragalus brachycarpus*. I

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Continuing an investigation of milk vetches of the Georgian flora [1, 2],* from an 80% ethanolic extract of *Astragalus brachycarpus* M. B., with purification on Sephadex G-75, we have obtained a total ethyl-acetate-soluble phenolic compound (0.55%). This material was transferred to a polyamide column and eluted with water and aqueous ethanol with gradually increasing concentrations of the latter. The fractions eluted by 10% ethanol, fluorescing blue, were hydrolyzed and rechromatographed on Sephadex LH-20 [3]. Two individual substances were isolated. One of them was identified as umbelliferone [3] and the other as scopoletin [4].

On further elution of the column with 15-30% ethanol, four individual compounds (I-IV) were isolated which were assigned to the flavonoids on the basis of qualitative reactions and the characteristics of their UV and IR spectra. Substances (I) and (II) proved to be glycosides, and (III) and (IV) aglycones [5]. Acid hydrolysis of (I) and (II) gave the aglycones (62 and 47%, respectively), both of which were identified as quercetin [6]. D-galactose was found in the sugar moiety of (I), and D-galactose and D-glucose in (II).

Substance (I) consisted of pale yellow acicular crystals with the composition $C_{21}H_{20}O_{12}$, mp 235-237°C, $[\alpha]_D^{20}$ −125° (c 0.1; methanol), $\lambda_{max}^{C_2H_5OH}$ 361, 259 nm. According to UV spectroscopy, free OH groups were present in positions 3', 4', 5, and 7 and the sugar component was attached at C_3 and had the β configuration of the glycosidic bond; on paper chromatography it appeared at the level of an authentic sample of hyperin, and a mixture with hyperin gave no depression of the melting point. Substance (I) was therefore identified as hyperin [6, 7].

The study of the structure of (II) is continuing.

Substance (III) was identified as quercetin, and (IV) proved to be kaempferol [2]. This is the first time that phenolic compounds have been isolated from *Astragalus brachycarpus* M. B.

*The Literature Cited was omitted in the Russian original — Publisher.

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