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STUDY OF THE CHEMICAL COMPOSITION OF RHAPONTICUM CARTAMOIDES

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Rhaponticum cartamoides (DC) Iljin., family Compositae, is similar to ginseng in its medical action [1]. It is used as a stimulant [2]. The roots and rhizomes of the plant have been found to contain tannins, inorganic salts, and vitamins A and C; no glycosides have been detected [3]. The roots of Rh. cartamoides collected in 1965 in the Altai were extracted with methanol. By paper chromatography at least nine substances were detected. The extract (yield 10%) was dissolved in water and extracted with 1-butanol.

When the butanolic extract was chromatographed on a column of polyamide powder, water eluted a compound (yield 1.5%) which was identified qualitatively and from the products of its reduction and hydrolysis as hesperidin [4]. The aqueous fraction, by chromatography on polyamide powder (with elution by water) and then on cellulose (with elution by the 1-butanol–acetic acid–water (4: 1: 5) system) gave a product decomp. 230-235° C, R_f 0.11; 0.80 [the same system – acetic acid–water (6: 4)]. UV spectrum: λ_{max} 215 and 295 mμ. Yield 1.5% of the total extract. The compound was readily soluble in water and gave color reactions like hesperidin. Hydrolytic degradation gave the aglycone hesperetin, and L-rhamnose and D-glucose were identified in the hydrolyzate.

The compound was not identical with substances reported previously and is apparently a new glycoside of hesperetin. The low R_f value of the glycoside shows that it probably contains more than two sugar residues.

In addition to the hesperetin glycosides mentioned above, the methanolic extract of the plant was shown by paper chromatography to contain a compound giving with a solution of vanillin in concentrated hydrochloric acid, an orange-red coloration characteristic for catechins and having a R_f value extremely close to that of epicatechin gallate [4].

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FLAVONOIDS OF ARTEMISIA TRANSILIENSIS. I

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It is known that Artemisia transiliensis contains essential oils, santonin, and alkaloids [1].

We have detected ten substances of flavonoid nature in this plant by paper chromatography and qualitative reaction [2]. The total flavonoids were separated on a Kapron column. They were eluted with aqueous methanol and methanol. Two individual substances were isolated.

To elucidate the nature of these flavonoids we used alkaline degradation, reduction, and acid hydrolysis [3], and also the features of the UV spectrum with ionizing and complex-forming reagents [4, 5].

The results of the chemical and spectroscopic investigations showed that the first substance, with mp 312° C, is quercetin, and the second, with mp 189–190° C is rutin.

The amount of flavonol was determined spectrophotometrically from the absorption maxima of the spots revealed with aluminum chloride. The measurements were carried out on a SF-4A spectrophotometer. The amount of quercetin found was 0.013% and of rutin 0.15% (on the weight of the absolutely dry raw material).

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FLAVONOLS OF THE LEAVES OF SORBUS PENDULA

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The present paper gives the results of a chemical study of the flavonoid composition of the leaves of Sorbus pendula.

The raw material was extracted with ethanol and the extracts were purified by the procedure described previously [1, 2]. The substances were separated by adsorption chromatography on polyamide, the eluting solvents being distilled water and ethanol of various concentrations. Three individual flavonoids were obtained. The results of a study of this product of acid hydrolysis, oxidative degradation, and enzymatic hydrolysis and of spectroscopic investigations [3] have shown that one of the flavonoids is quercetin 3-β-gentiobioside, the second is hyperin, and the third astragalin.

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CATECHINS OF RHEUM TATARICUM

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To obtain the total catechins [1] from the air-dry raw material (roots, seeds) of Rheum tataricum L. fil., it was wetted (70% of water on the weight of the raw material) and steeped in ether until the reaction with a 1% solution of vanillin in concentrated hydrochloric acid was negative. The ethereal extracts were dried with magnesium sulfate and evaporated in a current of nitrogen at 30° C. The dry residue was treated with chloroform to eliminate the aglycones