TRITERPENE GLYCOSIDES OF Clematis songarica

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Plants of the genus Clematis are rich in triterpene glycosides [1-5], and this applies to C. songarica Bge. (Sungari clematis), the roots of which were collected in the flowering period in the environs of Alma-Ata.

We freed an aqueous methanolic extract from pigments after defatting with ether and chloroform by percolation through alumina. Rapid and effective separation into a glycosidic fraction and reserve sugars was achieved by gel filtration on Sephadex G-10 or G-15. The yield of combined saponins was 5% of the weight of the initial raw material.

Chromatography on Silufol in several solvent systems yielded two glycosides, named in order of increasing polarity dzhungarosides A and B. When the saponins were revealed with phosphotungstic acid, several more compounds with a high chromatographic mobility were found which passed in the purification of the aqueous methanolic extract into the chloroform and which it was difficult at that stage of the investigations to assign to glycosides or free triterpenoids. The combined saponins were separated on a dry column of silica gel (100×250 mm) in n-butanol–ethanol–water (10:2:5).

Dzhungaroside A (mp 228-230°C, $[\alpha]_D^{18}$ −2.7° (c 4.3; water), was cleaved (5% H_2SO_4, 100°C, 5.5 h) into glucose, arabinose, rhamnose, and hederagenin.

Dzhungaroside B (mp 240-242°C, $[\alpha]_D^{18}$ −27° (c 2.2; dimethylformamide) was composed of the same monosaccharides and aglycone as vitalboside F [6].

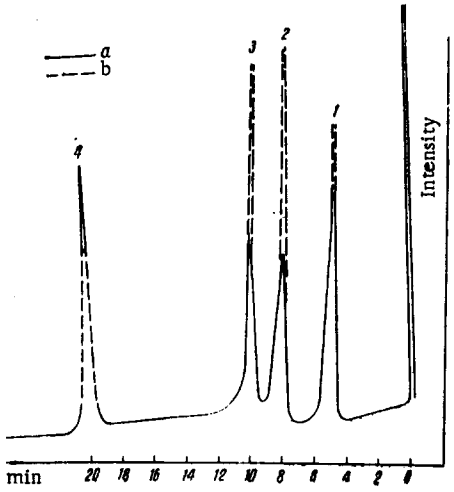

Fig. 1. Gas–liquid chromatogram of the aldononitriles of vitalboside F (*a*) and of dzhungaroside (b): 1) rhamnose; 2) rhibose; 3) arabinose; 4) glucose.

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The results of a chromatographic comparison of the acetates of the aldononitriles of the hydrolysates of both glycosides showed that the dzhungaroside B that we had isolated contains a different ratio of monosaccharides from vitalboside F (Fig. 1).

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