TRITERPENE GLYCOSIDES OF SOME REPRESENTATIVES OF THE FAMILY Dipsacaceae

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In studying the chemical composition of plants of the family Dipsacaceae Lindl. growing in Kirghizia, we have found that almost all representatives of the family are rich in triterpene glycosides [1] and have elucidated the structures of some glycosides [2-4]. The saponin content of this family is confirmed by reports of other workers [5, 6].

We have now studied the aglycones and carbohydrate composition of the combined saponins isolated from the roots of Scabiosa micrantha Desf., S. ochroleuca L., and Dipsacus laciniatus, L, and S. olivieri Coult.

The glycosides were isolated in the following way. The comminuted roots were defatted with chloroform and exhaustively extracted with methanol. The methanolic extract was evaporated to a syrupy mass and the saponins were precipitated with acetone. The precipitate was dried in a vacuum desiccator. The total saponins were hydrolyzed with 10% aqueous methanolic sulfuric acid at 90°C for 6-7 h.

The aglycones obtained were purified and separated by preparative chromatography on plates (30 × 30 cm) with a fixed layer of silica gel in the chloroform–methanol (50 : 1) system. The individual aglycones isolated were identified by the physicochemical constants of the compounds themselves and of their acetates and by their chromatographic behavior in the presence of markers. After hydrolysis, the monosaccharides were chromatographed on thin-layer plates impregnated with a 0.3 M solution of sodium dihydrogen phosphate [7]. The aglycones were revealed with an ethanolic solutions of tungstophosphoric acid and the sugars with o-toluidine salicilate.

The results of the investigations are given below:

Plant	Amount of Saponins in Roots, %	Aglycone	Carbohydrate Composition
Scabiosa micrantha	2,2	Oleanolic acid	D-Glc
S. olivieri	8,7	Oleanolic acid and hederagenin	D-Glc, L-Rha
S. ochroleuca	10,6	Oleanolic acid	D-Glc, D-Xyl, L-Rha
Dipsacus laciniatus	12,5	Hederagenin	D-Glc, L-Ara, L-Rha

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