

BRIEF COMMUNICATIONS

POLYSACCHARIDES OF SAPONIN-BEARING PLANTS

V. POLYSACCHARIDES OF THE EPIGEAL ORGANS OF

Allochrusa gypsophiloides

A. O. Arifkhodzhaev and D. A. Rakhimov

UDC 547.917

Polysaccharides (PSs) of various types have been isolated previously from the roots of *Allochrusa gypsophiloides* (Turkestan soaproot) and investigated [1]. In the present communication we give the results of an investigation of the polysaccharides of the epigeal organs (stems and leaves) of this plant collected in the phase of vigorous development.

The air-dry comminuted raw material was extracted three times for 2 h with methanol at room temperature and then at 80°C. The methanolic extracts were combined, concentrated in a rotary evaporator, and precipitated with acetone. The precipitate (total saponins) was washed several times with acetone and was dried in vacuum over P₂O₅. The yield of saponins was 14.0% on the weight of the air-dry raw material.

From the remains of the raw material we isolated successively by the method of [2] the water-soluble polysaccharides (WSPSs), pectin substances (PCSs), and hemicelluloses (HMCs). The complete hydrolysis of the polysaccharides and the GLC identification of the monosaccharides were carried out as described in [3]:

Type of PS	Yield of PS, % on air-dry weight	Gal	Glc	Man	Xyl	Ara	Rha	GalUA
WSPSs	10,0	3,0	2,7	—	1,0	2,7	1,2	+
PCSs	5,0	3,5	6,0	—	1,0	18,0	2,8	++
HMCs	9,0	1,0	1,4	.	22,0	1,2	.	+

Analysis of the PSs showed that the amounts of PCSs and HMCs in the epigeal organs of the plant were 2 and 1.5 times higher, respectively, than in the roots. The polysaccharides did not contain starch — i.e., they did not give a color reaction with iodine. Among the neutral sugar components of the PCSs, arabinose predominated, while in the HMCs it was xylose. This made it possible to assign the HMCs to polysaccharides of the xylan type.

The WSPSs were separated on DEAE-cellulose (—CO₃⁻²) into neutral and acidic fractions. Elution with water gave 10% of a neutral polysaccharide (NPS) consisting of arabinose, glucose, and galactose in a ratio of 5.0:1.6:1.0, respectively, while elution with 1 M (NH₄)₂CO₃ gave 90% of an acidic polysaccharide (APS) consisting of arabinose, xylose, and glucose in a ratio of 1.1:1.0:2.9, respectively.

Thus, from the epigeal organs of *Allochrusa gypsophiloides* we have isolated and characterized water-soluble polysaccharides, pectin substances, and hemicelluloses. The epigeal organs of the plant contained no polysaccharide of the glucogalactan type the presence of which is characteristic for the roots of the plant. Since the plant is cultivated, the epigeal organs may serve as a raw materials basis for obtaining pectin substances and saponins, for which there is a high demand in the national economy.

LITERATURE CITED

1. A. O. Arifkhodzhaev and E. S. Kondratenko, *Khim. Prir. Soedin.*, 230 (1983).
2. A. O. Arifkhodzhaev, D. A. Rakhimov, and Z. F. Ismailov, *Khim. Prir. Soedin.*, 246 (1980).
3. A. O. Arifkhodzhaev, D. A. Rakhimov, and Z. F. Ismailov, *Khim. Prir. Soedin.*, 702 (1981).

Institute of Chemistry of Plant Substances, Uzbekistan Academy of Sciences, Tashkent.
Translated from *Khimiya Prirodnikh Soedinenii*, Nos. 3,4, pp. 434-435, May-August, 1992.
Original article submitted October 15, 1991.