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BRIEF COMMUNICATIONS

POLYSACCHARIDES OF *Alhagi persarum*

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Some plant species of the genus *Alhagi*, fam. *Fabaceae* (*Leguminosae*) are widely used in folk medicine as mild purgatives and diuretics, and a thick decoction of the roots as a hemostatic in cases of hemorrhoids and bloody diarrhea. A decoction of the epigeal part is used for the treatment of intestinal infections [1]. The plants are sources of carotenes, essential oils, glycosides, organic acids, and dyes and tanning agents.

Four species of *Alhagi* (camel thorn) grow in Karakalpakia [2]. In the present communication we give the results of a study of the polysaccharides isolated from the seeds and the epigeal part of *Alhagi persarum* Boiss Buhse (Persian camel thorn) gathered in the fruit-ripening period on the territory of the 50-letie Oktyabrya sovkhoz [collective farm] in the Nukus region of Karakalpakia.

To isolate and analyze the polysaccharide composition we used a method [3] the essence of which is as follows — to eliminate substances of lipophilic nature the raw material is treated with chloroform and hexane, and then the components are fractionated according to their properties: water-soluble polysaccharides (WSPSs), with water; pectin substances (PcSs), with a mixture of solutions of oxalic acid and of ammonium oxalate; and hemicelluloses (HMCs), with alkali. In acid hydrolysates of the residues after the extraction of the hemicelluloses we detected mainly glucose.

After precipitation with ethanol, the WSPSs, PcSs, and HMCs were hydrolyzed with 2 N sulfuric acid, and their monosaccharide compositions were determined by PC and GLC. The results are given in Table 1. The seeds of this camel thorm contained more polysaccharides than the epigeal part. The products of the hydrolysis of the PcSs included rhamnose, arabinose, xylose, mannose, glucose, and galactose in various ratios. In the WSPSs of the epigeal part, mannose predominated quantitatively.

The PcSs consisted of a water-soluble fibrous white powder. Their quantitative characteristics, obtained by a titrimetric method [5], are given below (%):

Pectin	K_c	K_3	λ	OCH_3	GalUA	$[\alpha]_D^{20}$, deg (c 0,5; H_2O)
Seeds	3,1	2,2	57,9	1,5	52,7	+181
Epigeal part	3,5	3,6	50,6	2,4	61,6	+192

Camel thorn pectin belongs to the low-methoxyl type and differs from the pectins of higher plants [6] by its high mannose content.

The alkali-soluble polysaccharides of the seeds and of the epigeal part were identical in qualitative composition but differed by their monosaccharide ratios.

The monosaccharide composition of the HMCs of the seeds consisted predominantly of galactose and glucose, and that of the HMCs of the epigeal part of glucose and mannose.

Thus, the monosaccharides of the seeds and epigeal part of *Alhagi persarum* are represented by biopolymers of different kinds: water-soluble polysaccharides, pectin substances, and hemicelluloses. Consequently, from this camel thorn it is possible

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TABLE 1. Amounts of Polysaccharides and the Monosaccharide Composition of *Alhagi persarum*

Plant organ	Polysaccharide	Yield, % on the air-dry raw material	Ratio of the monosaccharides					
			Rha	Ara	Xyl	Man	Glc	Gal
Seeds	WSPSs	4.0	3.8	2.6	1.3	2.0	2.2	1.0
	PcSs	9.5	6.0	1.0	4.1	1.5	1.4	1.6
	HMCs	22.8	9.4	5.6	1.0	1.3	15.6	20.0
Epigeal part	WSPSs	3.9	25.0	6.0	2.0	110.0	1.0	10.0
	PcSs	3.1	1.4	1.4	Сл.	10. 0	1.0	3.3
	HMCs	13.5	1.6	1.0	1.0	3.1	14.7	3.3

to isolate a pectin suitable as a bioreagent and to consider it as extremely promising for pharmacological investigations as a detoxicant with respect to heavy metals.

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