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BRIEF COMMUNICATION

POLYSACCHARIDES OF *Diospyros kaki*

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The fruit of *Diospyros* kaki (kaki, or Japanese, persimmon) is a source of carotenoids [1] and polyvitamins. In addition it contains a considerable amount of carbohydrates, mainly glucose and fructose, readily assimilable by the organism [2]. However, information on the polysaccharide composition of the persimmons grown in the Republic of Uzbekistan is lacking.

In the present communication we give information on the polysaccharides of persimmon fruit of the varieties Khiyakuma, Tomapan, and Zendzhi-Meru, which are most common in the towns of Shirabad and Fergana. The polysaccharides were isolated from one sample of raw material in the usual sequence: first, the water-soluble polysaccharides (WSPSs) and then the pectin substances (PcSs) and hemicelluloses (HCs).

The samples of polysaccharides consisted of light brown powders possessing no reducing capacity, not giving a coloration with iodine, and dissolving in water. The mother alcoholic solution after the precipitation of the polysaccharides contained the free sugars glucose and fructose.

To determine their monosaccharide compositions, the polysaccharides (0.5—0.1 g) were hydrolyzed with 2 N H_2SO_4 (100°C, 24 h), followed by neutralization with $BaCO_3$ The compositions of the hydrolysates were determined by means of PC and GLC. The PC of the hydrolysates was conducted by the descending method on Filtrak FN—7,11 paper in the butan-1-ol—pyridine—water (6:4:3) system. The monosaccharide zones were revealed with aniline phthalate and urea. The relative amounts of the sugars were determined from the areas of the peaks on GL chromatograms of their aldononitrile acetate derivatives [3].

The amounts of polysaccharides and the ratios of the monosaccharides are given in Table 1.

TABLE 1. Carbohydrates of Some Varieties of Persimmon

Persimmon variety and growth site	Carbohydrates	Yield, % on the air-dry raw material	Ratio of the sugars					
			Gal	Glu	Ara	Xyl	Rha	Man
Khiyakuma (Shirabad)	WSPSs	3.7	7.2	38.7	11.2	8.4	2	1
	PcSs	1	13	13	56.2	5.6	6.8	1
	HCs	2.15	12.5	14	37.5	7.5	1	3
Tomapan (Denau)	WSPSs	4.2	2.8	55.2	2.7	1.8	1	2
	PcSs	3.4	14	17	42	6.8	5	1
	HCs	3.8	5	10	4.7	6.5	5	1
Khiyakuma (Fergana)	WSPSs	5.2	15.3	31	11.6	5.0	7.5	1
	PcSs	1.5	5.8	5.8	7.5	1.1	8	1
	HCs	1.6	8.7	24.7	13.5	15	1	3
Zendzhi-Meru (Fergana)	WSPSs	7.6	17	61.6	6.5	3	5.5	1
	PcSs	1.4	28	58	33.2	1.3	14	1
	HCs	2	2.8	18	7.2	1.7	8	1

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It can be seen from Table 1 that the water-soluble polysaccharides predominated in comparison with the PcSs and HCs. In the products of the hydrolysis of the WSPSs from the variety Khiyakuma (Shirabad) glucose and arabinose predominated; in the variety Tomapan, glucose; in Khiyakuma (Fergana); glucose, galactose and arabinose; and in Zendzhi-Meru, glucose and galactose. The pectin substances, obtained with a yield of 1.0—3.4% and consisting of odorless water-soluble powders with a creamy tinge, were precipitated from aqueous solutions with aluminum sulfate. In the hydrolysis product of the PcSs, in addition to the neutral monosaccharides given in the table, we found a considerable amount of galacturonic acid, which was identified by PC and by electrophoresis with a marker.

The alkali-soluble PSs (HCs) were present in larger amount than the PcSs. The HCs of the different varieties of persimmon differed by the quantitative ratios of their polysaccharides. Glucose predominated in their composition, except for the variety Khiyakuma (Fergana), where arabinose predominated.

As can be seen from the results obtained, in the persimmon fruits the free sugars glucose and fructose were present and the polysaccharides were represented by biopolymers of different types — WSPSs, PcSs, and HCs.

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