

## BRIEF COMMUNICATIONS

### POLYSACCHARIDES OF THE FRUIT OF *Crataegus orientalis*

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We have investigated the fruit of *Crataegus orientalis* growing in the Nakhichevan ASSR, collected during the ripening period in the Shakhbuzskii region.

Plants of the genus *Crataegus* L. from the family Rosaceae contain a series of biologically active substances [1-4].

The water-soluble polysaccharides (WSPSs) and pectin substances (PSs) of *Crataegus orientalis* have not previously been considered.

By exhaustive extraction of the air-dry raw material (45 g) with ethanol, part of the pigments, the soluble sugars, and the amino acids were first eliminated. The residue was then treated with 80% ethanol to free it from polyphenolic compounds and glycosides.

The polysaccharides were extracted from the fruit and were purified by methods described previously [5, 6]. The yield of WSPSs was 13.00% and of PSs 21.95%, these containing 8.40 and 12.00% of ash, respectively.

The polysaccharides were demineralized by the reprecipitation of aqueous solutions with acidified ethanol, by dialysis through a semipermeable membrane, and by treatment with KU-2 cation-exchange resin ( $H^+$  form). The ash content of the demineralized WSPSs was 0.5% and of the PSs 0.8%.

Samples of the polysaccharides were hydrolyzed with 2 N  $H_2SO_4$  at 100°C for 8 h. The resulting hydrolysate was neutralized with  $BaCO_3$ , filtered, and evaporated, and the residue was investigated by descending paper chromatography in the butan-1-ol-pyridine-water (6:4:3) system at 22-24°C for 40-42 h. The zones of the polysaccharides were revealed with aniline phthalate.

The amounts of the sugar residues were determined by the method of Zaitseva and Afanas'eva [7].

It was shown that the hydrolysate of the WSPSs contained arabinose and galactose in a ratio of 1.5:1.0 as the main components, and also rhamnose and galacturonic acid. In hydrolysates of the PSs, galacturonic acid, galactose, and arabinose in a ratio of 1.22:1.0\* were identified by the PC method.

The quantitative and qualitative characteristics of the PSs were determined by the titrimetric method [5]. The following results were obtained (%): free carboxy groups,  $K_c$  — 13.51; esterified groups,  $K_e$  — 6.96 (degree of esterification 34.00%); methoxy groups — 4.79. The galacturonic acid content was 43.08% [6].

The weight-average molecular weight  $M_w$  of the PSs was calculated from the relation

$$KM^2 = (\eta) = 1.1 \cdot 10^{-5} M \cdot 1.22,$$

where  $(\eta)$  is the reduced viscosity, and amounted to 65,000 [5].

The investigation of the polysaccharides of the silver hawthorn (*C. orientalis*) is continuing.

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