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POLYSACCHARIDES OF *Eremurus*.

XX. FRUCTOOLIGOSACCHARIDES FROM *E. lactiflorus*

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Glucofructans have been isolated previously from the tuberous roots of *Eremurus lactiflorus*. According to PC (water-saturated phenol system; revealing agent and alcoholic solution of urea), the total glucofructans formed a mixture of fructooligosaccharides consisting of residues of fructose (main spot) and glucose.

In order to isolate a homogeneous oligosaccharide, the combined material (1.2 g) was separated by gel chromatography on a column of Sephadex G-15 (1.3 × 60 cm). The oligosaccharides were eluted with water, the fractions being monitored by the phenol—sulfuric acid method. The eluates corresponding to the peaks of the individual oligosaccharides were combined and evaporated and the residues were treated with acetone. This gave white pulverulent sugars. Nonreducing penta- and hexaoligosaccharides were isolated (yields 22.4% and 15.6%, respectively), which, according to PC, were individual substances. The ratio of fructose to glucose according to ^{13}C NMR spectroscopy was 5:1 for the hexaoligosaccharide and 4:1 for the pentaoligosaccharide.

Their IR spectra had bands at 940, 880, and 820 cm^{-1}. The PC and GLC analyses of a hydrolysate of the products of Smith degradation showed the presence of glycerol. The oligosaccharides were methylated, by Hakomori's method. After formolysis and hydrolysis of permethylates of the oligosaccharide, the following sugar derivatives were identified by comparison with markers by TLC on Silufol (methyl ether—1% ammonia (30:4) system) and by GLC [1]: 3,4,6-tri-O-Me-D-fructose, 1,3,4,6-tetra-O-Me-D-fructose, and 2,3,4,6-tetra-O-Me-D-glucose.

The results of periodate oxidation and methylation indicated the presence of a 2 → 1 bond between the monosaccharide residues.

The ^{13}C NMR spectroscopy of the oligosaccharides (using a Bruker WR-60 instrument, for the substances in D_2O at 50°C with methanol as internal standard at 50.15 ppm relative to tetramethylsilane) likewise showed the presence of 2 → 1 bonds. The glucose was present at the nonreducing ends of the oligosaccharides and was attached to C-2 of a fructose residue as was shown by the peak of the chemical shift of the C-1 atom of α-D-Glc$_p$ (93.1 ppm).

This is the first time that these oligosaccharides have been isolated from plants of the genus *Eremurus*.

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