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POLYSACCHARIDES OF *Eremurus*.

XXIII. CARBOHYDRATES FROM LEAVES OF SOME SPECIES OF *Eremurus*

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We have previously characterized the pectin substances (PSs) of the leaves of a number of species of plants of the genus *Eremurus* [1, 2]. Continuing a study of *Eremurus* polysaccharides, we have investigated the water-soluble polysaccharides (WSPSs), the glucofructans (GFs), and the hemicelluloses (HCs).

TABLE 1

| Plant | Type of carbohydrate | Yield of PSs, % | Ratio of the monosaccharides | | | | | |
|--|----------------------|-----------------|------------------------------|------|------|------|------|------|
| | | | Rham | Ara | Xyl | Man | Glc | Gal |
| <i>E. anisopterus</i> (K. et. K.) Rgl | WSPSs | 2.42 | 27 | 18 | 16 | 1 | 18 | 49 |
| | HCs A | 1.22 | 17 | 18.3 | 21.7 | 2.6 | 7.5 | 1 |
| | HCs B | 0.8 | 27.5 | 32 | 13.9 | 1 | 64 | 44 |
| <i>E. comosus</i> O. Fedtsch. | WSPSs | 2.18 | 3.3 | 2.8 | 1 | 1.5 | 5.3 | 6.4 |
| | HCs A | 0.4 | 1.38 | 6.33 | 7.2 | 2.2 | 9.8 | 1 |
| | HCs B | 1.5 | 1.5 | 2.59 | 1.5 | 1 | 6.4 | 1.11 |
| <i>E. korovinii</i> B. Fedtsch. | WSPSs | 2.6 | 1.09 | 1.11 | 1.17 | 1 | 2.7 | 2 |
| | HCs A | 0.36 | 7.5 | 8.39 | 3.5 | 1.98 | 7.1 | 1 |
| | HCs B | 1.82 | 3.9 | 3.81 | 1.6 | 1 | 1.2 | 1 |
| <i>E. lactiflorus</i> O. Fedtsch. | WSPSs | 4.72 | 13.5 | 8.7 | 5.7 | 1 | 4 | 2.7 |
| | HCs A | 0.26 | 2.3 | 3.35 | 4.35 | 1.3 | 14.1 | 1 |
| | HCs B | 2.8 | 1.5 | 1.38 | 1 | 1.57 | 2.8 | 1.57 |
| <i>E. luteus</i> Baker | WSPSs | 3.98 | 5.77 | 2.84 | 1.2 | 1 | 1.88 | 5.77 |
| | HCs A | 1.16 | 1 | 7.1 | 7.7 | 4 | 1.3 | 1.7 |
| | HCs B | 1.56 | 3.71 | 3.46 | 1.71 | 1 | 2 | 1.7 |
| <i>E. olgae</i> Rgl | WSPSs | 5.46 | 5.6 | 3.5 | 2.86 | 2.16 | 1 | 2.4 |
| | HCs A | 0.5 | 50 | 42.5 | 62 | 13.1 | 23.1 | 1 |
| | HCs B | 2.36 | 4.6 | 41.3 | 35.5 | 9.55 | 8.8 | 1 |
| <i>E. regelii</i> Vved. | WSPSs | 6.56 | 8.57 | 5.94 | 3.7 | 1.14 | 3.25 | 1 |
| | HCs A | 0.26 | 1.23 | 1.18 | 1.7 | 1.55 | 3.93 | 1 |
| | HCs B | 2.45 | 9.2 | 5.13 | 3.2 | 1.63 | 1.6 | 1 |
| <i>E. robustus</i> Rgl | WSPSs | 2.92 | 17 | 17.3 | 6 | 1 | 3.5 | 6 |
| | HCs A | 0.24 | 1.3 | 1 | 1.46 | 2.4 | 1.3 | 5.1 |
| | HCs B | 2.4 | 72.8 | 47.3 | 32.4 | 7.2 | 2.6 | 1 |
| <i>E. roseolus</i> Vved. | WSPSs | 6.28 | 6.1 | 4.4 | 6.75 | 1 | 10 | 2 |
| | HCs A | 0.4 | 5.6 | 2.88 | 8.13 | 1 | 7.8 | 2.64 |
| | HCs B | 2.9 | 3.2 | 1.6 | 1 | 1.05 | 2.9 | 1.2 |
| <i>E. sogdianus</i> (Rgl) Benth et Hook | WSPSs | 2.96 | 2.81 | 4.4 | 1 | 3.46 | 5.6 | 7.3 |
| | HCs A | 0.13 | 2.18 | 1 | 1 | 1.47 | 2.12 | Сл. |
| | HCs B | 0.82 | 1.6 | 21 | 16.3 | 6.4 | 4.6 | 1 |
| <i>E. baussunensis</i> O. Fedtsch | WSPSs | 4.4 | 1.45 | 1.7 | 1.75 | Сл. | Сл. | 1 |
| | HCs A | 1.4 | 1.8 | 4.2 | 1 | Сл. | Сл. | 2 |
| | HCs B | 3.4 | Сл. | 9.7 | 2.3 | Сл. | Сл. | 1 |

The polysaccharides were isolated successively from a single sample of the air-dry material: first the WSPSs, then the GFs and the HCs (after the isolation of the pectin).

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The carbohydrates were hydrolyzed (2 N H₂SO₄, 100°C, 8 h for the WSPSs, 4 h for the GFs, and 48 h for the HCs), and the hydrolysates were analyzed by PC and GLC [3]. Information on amounts and monosaccharide compositions are given in Table 1.

The amounts of WSPSs in the different species ranged between 2.18 and 6.96%. They consisted of light cream-colored powders containing no starch, as was shown by the negative reaction with iodine. The hydrolysis products of the WSPSs contained rhamnose, galactose, arabinose, and xylose in various proportions.

The amount of GFs was 1.8-6.92%. They consisted of a syrupy mass in which fructose and glucose were detected as the main components. The alkali-soluble polysaccharides (hemicelluloses A and B; total yields from 0.1 to 3.4%) contained, in addition to those of neutral sugars, galacturonic acid residues. The HCs differed little in qualitative composition but did differ in the ratio of the monosaccharide residues.

Thus, the leaves of plants of the genus Eremus lack mucilaginous polysaccharides of the glucomannan type that are characteristic for the tuberous roots [4].

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O-[1(3),2-DIACYLGLYCERO-3(1)]-N,N,N-TRIMETHYLHOMOSERINE
FROM *Nephrochloris salina*

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In a study of the lipid composition of the yellow-green microalga Nephrochloris salina collected in Peter the Great Bay (Sea of Japan) and adapted to a synthetic medium by L. A. Pautova (Institute of Ecology of the Volga Basin, Academy of Sciences of the USSR, Tol'yatti), it was established that one of the polar lipids is a compound close on chromatographic behavior to diacylglycerotrimethylhomoserine (DGTS). This compound was isolated from the total lipid extracts with the aid of column and preparative chromatography on silica gel as described in [1, 2].

For its complete identification we recorded its IR, ¹H NMR, and mass spectra which basically were identical with the spectra of DGTS isolated from other sources [1-4].

The fatty acid composition of the DGTS from Nephrochloris salina was investigated with the aid of GLC (wt. %): 16:0 - 9.2; 16:1 - 2.3; 18:0 - 6.6; 18:1 - 47.6; 18:2ω6 - 1.3; 18:3ω3 - 1.2; 18:4ω3 - 29.3; 22.5ω3 - 2.5; saturated - 15.8; monoenoic - 49.9; dienoic - 1.3; polyenoic - 33.0. The fatty acids were identified as described previously [5, 6]. The main fatty acids of the DGTS were the 18:1 and 18:4ω3 species.

Thus, DGTS has been isolated from a yellow-green microalga and its physicochemical characteristics and fatty acid composition have been studied.

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