Polysaccharide	Yield, % on absolutely dry weight	*Gal*	*Glc*	*Man*	*Ara*	*Rha*	*Xyl*	*GalUA*
WSPSs	9.2	5,0	1,0	Tr.	Tr.	Tr.	—	+
PSs	2.3	5.4	2,6	1,0	36.0	2,5	—	+
HCs	6,2	9,0	17 0	7,1	20 2	1,0	16,3	+

The methanolic mother solution after the precipitation of the WSPSs was concentrated and again precipitated with methanol (1:10). This gave 2.8% (on the weight of the plant) of a mixture of oligosaccharides from which two oligosaccharides were isolated by PC: 1) containing D-galactose and D-glucose residues in a ratio of 5.0:1.0, and 2) containing D-galactose, D-glucose, and D-xylose residues in a ratio of 2.0:2.5:1.0.

The WSPSs themselves consisted of a white amorphous powder readily soluble in water, containing no nitrogen or mineral impurities and giving a negative starch reaction with iodine. When they were separated on DEAE-cellulose (CO_3^- form), into acidic and neutral polysaccharides [2], elution with water gave 88% of a neutral polysaccharide (NPS) and elution with 1 M $(NH_4)_2CO_3$ gave 9.6% of an acidic polysaccharide (APS).

Gel chromatography on Sephadex G-50 under conditions described previously [2] showed that the neutral polysaccharide was polydisperse (molecular weights from 1000 to 2000). The NPS included galactose and glucose residues (5:1) with traces of mannose, arabinose, and rhamnose residues. Thus, the bulk of the WSPSs of *A. gypsophiloides* consists of a mixture of low-molecular-weight glucogalactans.

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STRUCTURE OF A O-SPECIFIC POLYSACCHARIDE ISOLATED FROM THE LIPOPOLYSACCHARIDE OF *Yersinia pseudotuberculosis*, SEROVAR IA

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Swedish workers [1] have previously put forward a structure of the trisaccharide repeating unit of the O-specific polysaccharide isolated from the liposaccharide (LPS) of the pseudotuberculosis microbe *Yersinia pseudotuberculosis*, serovar IA.

Information that we have obtained indicates that the repeating unit of this polysaccharide is a tetrasaccharide constructed of paratose, 6-deoxyheptose, galactose, and N-acetylglucosamine residues in equimolar ratio.

The lipopolysaccharide and the O-specific polysaccharide were isolated as described previously [2].

In a hydrolysate of the polysaccharide equimolar amounts of paratose, galactose, and 6-deoxyheptose were found by paper chromatography and gas–liquid chromatography (GLC). On analysis with the aid of GLC of the hydrolysate after preliminary deamination [3], 2,5-anhydromannose was detected, in addition to galactose and the 6-deoxyheptose, which shows the presence of glucosamine in the hydrolysate. Paratose is decomposed under these

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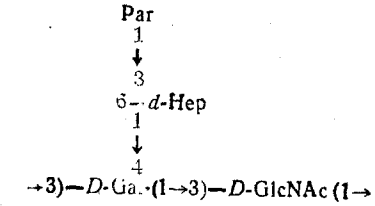
conditions. The presence of glucosamine (17.7%) was also shown with the aid of an amino acid analyzer. The glucosamine residue is acetylated.

Methylation of the O-specific polysaccharide [4] with subsequent hydrolysis and analysis of the methylated sugars in the form of the corresponding methyl glycoside acetates with the aid of chromato-mass spectrometry permitted the identification of 2,6-di-O-methyl-galactose, a 2,4,7-tri-O-methyl-6-deoxyheptose, and N-acetyl-4,6-di-O-methylglucosamine, together with a small amount of permethylated 6-deoxyheptose. Permethylated paratose was identified by chromato-mass spectrometry in the form of the acetate of the corresponding polyol.

The methylation results indicate that the paratose residue is terminal and it is probably linked with the heptose residue, while the glucosamine residue is present at the reducing end. The galactose residue is present at a point of branching of the carbohydrate chain of the polysaccharide.

As a result of the partial hydrolysis of the LPS (0.1 N HCl, 100°C, 30 min), a mixture of two oligosaccharides consisting of 6-deoxyheptose, galactose, and glucosamine residues was obtained. The oligosaccharide fraction was subjected to exhaustive methylation [4], and the products were separated and analyzed by chromato-mass spectrometry. As a result, two oligosaccharides were identified: the disaccharide 6-d-Hep-(1 → 4)-Gal and the trisaccharide 6-d-Hep-(1 → 4)-Gal-(1 → 3)-Glc-NAc. Thus, galactose and glucosamine residues are present in the main chain of the O-specific polysaccharide, and paratose and 6-deoxyheptose residues in the side chain.

In the light of the fact established previously that the galactose and glucosamine residues belong to the D series, it is possible to suggest a structure of the repeating unit of the O-specific polysaccharide isolated from the LPS of *Y. pseudotuberculosis*, serovar I A, in the following way:



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