Chemistry of Natural Compounds, Vol. 33, No. 2, 1997

BRIEF COMMUNICATIONS

POLYSACCHARIDES OF *Eremurus*. XXX. METHOD OF ISOLATING A POLYSACCHARIDE AND ITS PHARMACOLOGICAL ACTIVITY

D. A. Rakhimov

UDC 547.917

In recent years, investigations on the creation of preparations capable of fulfilling some function or other of the blood have been carried out intensively. Together with synthetic dextrans or protein plasma substitutes [1], plant polysaccharides are also of interest from the point of view of the creation of new plasma substitutes [2].

The task of the present investigation was to obtain a polysaccharide that can be used as a component of medical preparations.

A polysaccharide was isolated from the tuberous roots of *Eremurus regelii* Vved. by the following procedure. The air-dry comminuted tuberous roots (1 kg) were extracted with water at room temperature twice in ratios of 1:10 and 1:5. The water-soluble polysaccharides were precipitated from the resulting extract with 96% ethyl alcohol in a ratio of 1:2. The precipitate was treated with 5% trichloroacetic acid to eliminate proteins, and the mixture was centrifuged.

A polysaccharide was precipitated from the acid solution with ethyl alcohol. A solution of this precipitate in 0.05 N HCl was kept at 83 ± 2°C for 45 min. After the solution had been cooled to room temperature, the required polysaccharide was precipitated from it with alcohol (1:2 by volume). The precipitate was separated off, and, for dewatering, it was washed with alcohol of increasing concentration, dried in a vacuum desiccator over P_2O_5, and ground to a powder. The yield of polysaccharide was 8.0% of the weight of the air-dry raw material. It had the form of a powder, white or with a yellowish tinge, $[\alpha]_D^{20}$ −29 ± 3° (*c* 1.0; water), melting with decomposition at 273-280°C, and soluble in water. IR spectrum (KBr, cm^{-1}) 3600-3400, 2930, 1750, 1650, 1250, 885, 810.

The structure of the polysaccharide was studied by hydrolysis, periodate oxidation, and methylation. It consisted of *D*-glucose and *D*-mannose residues. The main product detected after Smith degradation was erythritol, with traces of glycerol.

The Hakomori methylation of the polysaccharide gave a permethylate in a hydrolysate of which, by TLC in the methyl ethyl ketone-1% ammonia (30:4) system with authentic samples, we identified mainly 2,3,6-tri-O-Me-glucose and 2,3,6-tri-O-Me-mannose. The results of periodate oxidation and of methylation showed the presence of β-1→4 glycosidic bonds in the polysaccharide.

It has been subjected to pharmacological trials for toxicity, pyrogenicity, anaphylactic properties, and harmlessness for the animal organism in the Scientific Research Institute of Hematology and Blood Transfusion, Ministry of Health of the Republic of Uzbekistan. The polysaccharide studied is a biologically active substance similar to reopoliglukin and possesses the capacity for normalizing disturbed hemodynamics and increasing the survival rate of rabbits subjected to hemorrhagic shock.

REFERENCES

1. M. D. Mashkovskii, Drugs [in Russian], Part 2, Meditsina, Tashkent (1989), p. 99.
2. B. N. Stepanenko, Usp. Khim., **30**, No. 5, 641 (1961).

Institute of the Chemistry of Plant Substances, Academy of Sciences of the Republic of Uzbekistan, Tashkent, fax (3712) 40 64 75. Translated from Khimiya Prirodnykh Soedinenii, No. 2, pp. 276-277, March-April, 1997. Original article submitted April 16, 1996.

0009-3130/97/3302-0207$18.00