

7th World Congress on

BIOPOLYMERS AND POLYMER CHEMISTRY

June 04-06, 2018 Osaka, Japan

Characterization of a polysaccharide from *Eremurus hissaricus* roots growing in TajikistanZayniddin K Muhidinov¹, Jamshed T Bobokalonov¹, Ikrom Ismoilov¹, Liu LinSu², Gary Strahan² and Arland T Hotchkiss²¹Academy of Sciences of Republic of Tajikistan, Tajikistan²Eastern Regional Research Center-United States Department of Agriculture, USA

Roots of medical plants are important resources of bioactive compounds including a polysaccharide, many of which have been reported to possess various biological functions. Two types of Water-Soluble Polysaccharides (WSP) and Acid-Soluble Polysaccharides (ASP) with 23% and 8% yields, the molecular weights of 495 kDa and 179 kDa, respectively were obtained from the roots of *Eremurus hissaricus* growing in Tajikistan in dormancy periods. The crude polysaccharides after deproteinization were purified by ion-exchange and gel filtration chromatography to obtain a homogeneous polysaccharide. The monosaccharide composition of WSP and ASP were analyzed by HPAEC-PAD. WSP was composed of D- mannose and D-glucose in 1.7:1 molar ratio. ASP content includes the pectic polysaccharide. IR spectra and analysis of 2D NMR analyses of WSP provide evidence that it has a backbone of (1→4)-linked β-d-glucopyranosyl and β-d-mannopyranosyl. The NMR and FTIR spectra of both crude and purified WSP have no differences. This fact probably indicates that WSP has no significant impurity. The carboxyl group of WSP is highly esterified. The NMR analyses of the ASP and deproteinated ASP polysaccharides suggest that the samples are composed of rhamnose, galactose or glucose, xylose and arabinose with partially methyl- and acetylated carboxyl groups which might be consistent with a branched pectic rhamnogalacturonan. Unfortunately, monosaccharide analysis has not yet been performed on these samples. The NMR spectrum of the ASP-S3 sample is similar to the other two but it appears to lack resonances assignable to xylose. It is unclear what this means. The bands at 801 cm⁻¹ in the FTIR of the ASP samples were characteristic of the α-pyranose configuration of sugar unit of the pectin polysaccharide, while the absorption in the region of 880-890 cm⁻¹ confirms the presence of β-pyranose configuration of another sugar residue in the WSP.

Biography

Zayniddin K Muhidinov has obtained his degree in Chemistry at the Tajik State University and PhD in Chemistry of Natural Compounds and Doctor of Science degree in Polymer Chemistry at Chemistry Institute of Academy of Sciences of the Tajikistan Republic. In the last 14 years, his group has been in collaboration with the USDA scientists in several projects pertaining to development of domestic and agricultural byproducts into Drug Delivery Systems (DDS) for therapeutic purposes. He is also the author of a monograph, four chapters of the book, more than 290 scientific articles and abstracts, including 38 papers in peer reviewed journals and 10 patents.

muhidinovzayniddin@gmail.com

Notes: