

## PL12. PROPERTIES, STRUCTURE, AND BIOLOGICAL ACTIVITY OF ARABINO GALACTANS AND GALACTOMANNANS OF SOME PLANT SPECIES OF UZBEKISTAN

R.K. RAKHMANBERDIYEVA<sup>1\*</sup>, D.Z. AZIZOV<sup>1</sup>, K.S. ZHAUYNBAYEVA, F.A. KODIRALIEVA<sup>1</sup>, O.SH.BOYMATOV<sup>1</sup>, M.KH. MALIKOVA<sup>1</sup>

<sup>1</sup>Institute of the Chemistry of Plant Substances named after acad. S.Yu. Yunusov AS RUz, Tashkent (Uzbekistan)

\*Corresponding Author. E-mail: [rakhmanberdieva@mail.ru](mailto:rakhmanberdieva@mail.ru)

At present, the flora of Uzbekistan presents practically unlimited possibilities for studying various classes of polysaccharides. In this regard, water-soluble polysaccharides, galactomannans and arabinogalactans, are of great interest, since they are generally non-toxic and have a wide range of biological activity. The Apiaceae, Asteraceae and Fabaceae families, in particular, plants with the content of various groups of biologically active compounds with a wide range of pharmacological activity are of considerable interest. We isolated homogeneous arabinogalactans with Mm 38-40 kDa from two species *Ferula* and *Silybum marianum* and established their structures. It was shown that they are branched polysaccharides with a main polymer chain consisting of 1,6-linked  $\beta$ -galactopyranose residues, where  $\alpha$ -arabinofuranose residues and its 1,5-linked oligomers, as well as  $\beta$ -Glc pA- 4-OMe-(1 $\rightarrow$ 6)- $\beta$ -Galp-(1 $\rightarrow$  fragments were located in the C-3 position. It has been established for the first time that a small portion of the main chain of the *F. kuhistanica* arabinogalactan macromolecule carries  $\beta$ - galactopyranose residues in the C-2 position. Pharmacological research revealed that *Ferula* arabinogalactans have prebiotic activity. Based on the water-soluble polysaccharide *F. kuhistanica*, Arbifilan was created, which is recommended as a feed additive in animal husbandry to normalize the gastrointestinal activity of animals. WSPS isolated from the roots of *F. kuhistanica* have antibacterial activity. From the seeds of *Gleditsia*, *Crotalaria alata* and *Gumnogladus dioca*, galactomannans with high Mm from 760 to 3000 kDa were isolated. It has been established by chemical and spectral methods that the isolated galactomannans consist of  $\beta$ -1,4-linked polymannans, in which some mannopyranose residues are replaced by  $\alpha$ -1,6 linked galactopyranose residues, their molecular weight, the ratio of monosaccharide residues and the substitution sequence  $\beta$ - D-mannan  $\alpha$ -D-galactose. Together with Research Institute of Hematology and Blood Transfusion Ministry of Health of the RUz on the basis of *Gleditsia triacanthos* galactomannan, the blood substitute "Reoambrosol" was developed. Pharmacological studies have shown that galactomannan is an integral part of the polyfunctional blood substitute of hemodynamic action rheoambrosol, which has hemodynamic antiacidotic and antioxidant effects in hemorrhagic shock.

**Keywords:** Arabinolactan; glucomannan; *Ferula*

### REFERENCES

- [1] Rakhmanberdyeva RK, Zhaunbayeva KS, Senchenkova SF, Shashkov AS, Bobakulov Kh M. Structure of arabinogalactan and pectin from the *Silybum marianum*. Carb. Research. 2019; 485: 107797. <https://doi.org/10.1016/j.carres.2019.107797>
- [2] Boymatov Sh O, Rakhmanberdyeva RK. Scien. Conf. Actual problems of the chemistry of Natural Compounds. Tashkent. March 17. 2022, P. 48.
- [3] Kodiralieva FA, Shashkov AS, Rakhmanberdyeva PK. Chem. Nat/ Compds. 2015; 3: pp.355-358.