

**FRACTIONATION AND COMPOSITIONAL FEATURES OF THE
CARBOHYDRATE COMPLEX OF WILD PEAR (*Pyrus pyraster* L.) FRUITS**

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Wild-growing fruit species are of interest as sources of carbohydrates differing in molecular size, composition, and structural organization. Nevertheless, the carbohydrate complex of wild pear (*Pyrus pyraster* L.) fruits has received considerably less attention than that of cultivated *Pyrus* varieties. In the present work, soluble sugars and the major polysaccharide fractions of *P. pyraster* fruits were investigated to obtain a more detailed chemical characterization of this plant material.

Mature fruits collected in the Bakhmal district of the Jizzakh region of Uzbekistan were air-dried and ground before analysis. Low-molecular-weight sugars were extracted with aqueous ethanol and analyzed by high-performance liquid chromatography with refractive index detection. The remaining plant material was subjected to successive extraction with water, an oxalic acid–ammonium oxalate solution, and 5% KOH to obtain water-soluble polysaccharides (WSP), pectic substances (PS), and hemicelluloses (HC), respectively. After acid hydrolysis, the monosaccharide composition of the isolated fractions was examined chromatographically.

Fructose, glucose, and sucrose were detected in the alcohol-soluble fraction of *P. pyraster* fruits. Their relative ratio depended on the ethanol concentration used for extraction. The fructose/glucose/sucrose ratios were 2.5:1.5:1.0 and 6.0:3.0:1.0 in the 40% and 70% ethanol extracts, respectively. Thus, fructose was the predominant soluble sugar in both extracts, while its relative contribution increased in the 70% ethanol fraction.

Successive extraction of the plant material afforded WSP, PS, and HC in yields of 1.9, 2.1, and 2.8%, respectively, calculated on an air-dried raw material basis. The three fractions differed noticeably in their monosaccharide profiles. The WSP fraction contained mainly arabinose, glucose, and galactose, with smaller amounts of xylose. Pectic substances were distinguished by a relatively high proportion of arabinose and the presence of uronic acids. The hemicellulose fraction showed a different distribution of neutral monosaccharides, with xylose and glucose among its characteristic constituents. These differences indicate that the carbohydrate complex of wild pear fruits is composed of chemically heterogeneous polysaccharide populations rather than a single dominant polymer fraction.

The isolated pectic substances had a degree of esterification of 15.6%, which allows them to be classified as low-esterified pectins. Taken together, the results show that *P. pyraster* fruits contain both fructose-rich soluble carbohydrates and several structurally distinct polysaccharide fractions. The obtained data complement the limited information available on the chemical composition of wild pear fruits and provide a basis for further structural studies of their pectic and hemicellulosic components.