# POLYSACCHARIDES OF *Polygonum aviculare*

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It is known that plants of the genus *Polygonum* (family Polygonaceae) are sources of a number of valuable drugs [1, 2]. Its other biologically active substances, including carbohydrates, have been studied chemically to an inadequate degree.

The aim of the present investigation was the isolation and chemical study of the water-soluble polysaccharides from the herbage of *Polygonum aviculare* (knotweed).

We extracted the polysaccharides with hot water and solutions of electrolytes under various temperature conditions from the herbage of knotweed collected in July-August, 1976, at the village of Solotcha, Ryazan Oblast. The yield was 4-6%, and the ash content 16-18%. The polysaccharides were demineralized by reprecipitation with acidified ethanol and by dialysis through semipermeable membranes. Final purification was achieved by the passage of a 1% solution through KU-2 ($H^+$) and AV-17 ($OH^-$) ion-exchange resins. Ash content 0.6-0.8%; amount of uronic anhydride 47.3% [3].

To determine their qualitative carbohydrate composition, the polysaccharides were subjected to hydrolysis with 1N $H_2SO_4$ [4]. The solution was concentrated in vacuum and was used for chromatographic analysis. Paper chromatography (PC) was performed on FN-11 paper in the butan-1-ol—pyridine—water (6:4:3) and ethyl acetate—formic acid—acetic acid—water (18:1:4:3) systems. Galacturonic acid and the neutral monosaccharides galactose, glucose, xylose, arabinose, and rhamnose were detected. For the quantitative determination of the monosaccharide composition, we prepared the acetylated aldononitriles [5] and investigated them on a Tsvet-4-67 gas chromatograph with a flame-ionization detector using a 100 × 0.3 cm column containing 5% of XE-60 on Chromaton N-AW-DMCS at 220°C with nitrogen as the carrier gas. The relative amounts of rhamnose, arabinose, xylose, and galactose determined from the areas of the peaks were approximately 5:18:1:6. Glucose was present in the polysaccharide in insignificant amounts.

Thus, the chemical investigation performed shows that the polysaccharide complex contains galacturonic acid and arabinose as the main components.

## LITERATURE CITED

1. A. D. Turova, Medicinal Plants of the USSR and Their Applications [in Russian], Moscow (1974), p. 339.
2. Atlas of Medicinal Plants of the USSR [in Russian], Moscow (1962), p. 138.
3. F. Henglein, in: Biochemical Methods of Plant Analysis [in Russian], Moscow (1960), p. 290.
4. A. G. Gorin and A. I. Yakovlev, Khim. Prirodn. Soedin., 137 (1974).
5. V. M. Easterwood and B. J. L. Huff, Svensk Papperstidn., 72, 768 (1968).

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