PECTINIC SUBSTANCES FROM *Narsiccus tazetta* LEAVES

K. S. Zhauynbaeva, M. Kh. Malikova, and D. A. Rakhimov UDC 547.917

We studied previously the structure of the glucomannan from the bulb of *Narcissus tazetta* [1]. In continuation of this research, we present results obtained for the pectinic substances (PS) from leaves of *N. tazetta*, which are insufficiently studied from a chemical perspective.

PS were isolated as before [2] in 5.4% yield. They are an amorphous brown powder that is very soluble in water and forms viscous cloudy solutions with η_{rel} 3.2 (*c* 1.0, water). The reaction with starch is negative. The molecular weight of the PS is 68,000 according to sedimentation analysis.

The quantitative properties of the PS according to titrimetric analysis are: K_f, free carboxylates, 9%; K_e, esterified carboxylates, 16.2%. The degree of esterification is 64.2%, which assigns the PS as highly esterified pectins [3].

The IR spectrum contains absorption bands typcal of other pectins: 3400, 2940, 1650, 1110, 840 cm^{-1} [4].

Paper chromatography (*n*-butanol:pyridine:water, 6:4:3, anilinium phthalate, 100°C) of the total acid hydrolysis of the PS (H_2SO_4, 2 N, 100°C, 24 h) detected mainly galacturonic acid in addition to the neutral sugars galactose, glucose, mannose, xylose, and arabinose in a 5.8:5.6:1:1.5:2 ratio, respectively.

GC analysis was performed on a Chrom-5 instrument with a flame-ionization detector in a stainless-steel column (200 × 0.3 cm) packed with XE-60 (5%) on Chromaton NAW (0.200-0.250 mesh) at 200°C with He carrier gas (60 mL/min).

Partial acid hydrolysis of the PS (H_2SO_4, 1 N, 100°C, 4 h) produced galacturonan consisting only of D-galacturonic acid units. According to IR spectroscopy, the galacturonan gives the following absorption bands: 3600 (OH), 1730 (carboxylate carbonyl stretching), and 830 cm^{-1} (α-glycoside bond). The PS of *N. tazetta* differ from those of *N. poeticus* in molecular weight, ratio of monosaccharides, and degree of esterification.

REFERENCES

1. K. S. Zhauynbaeva, M. Kh. Malikova, and D. A. Rakhimov, *Khim. Prir. Soedin.*, 186 (2003).
2. M. Kh. Malikova, *Khim. Prir. Soedin.*, 320 (1994).
3. R. Krats, A. A. Kochetkova, and A. Yu. Kolesnev, *Pishch. Promst.*, No. 1, 31 (1993).
4. M. P. Filippov, *Infrared Spectra of Pectinic Substances* [in Russian], Shtiintsa, Kishinev (1978).

S. Yu. Yunusov Institute of the Chemistry of Plant Substances, Academy of Sciences of the Republic of Uzbekistan, Tashkent, fax (99871) 120 64 75. Translated from Khimiya Prirodnykh Soedinenii, No. 2, p. 168, March-April, 2004. Original article submitted February 16, 2004.

 0009-3130/04/4002-0198