GLUCOSAMINE OF THE POLYSACCHARIDE FRACTIONS FROM MISTLETOE AND THE CHINESE PARASOL TREE

D. A. Murav'eva, O. I. Popova, and K. O. Gasparyan

UDC 547.458:615.322:582.651.224:582.789.07

Continuing a chemical study of mistletoe (Viscum album) and the Chinese parasol tree (Firmiana simplex) we have obtained the following polysaccharide fractions: water-soluble (WSPSs), pectin substances (PSs) and hemicellulose (HC). We used known procedures [1-3] to isolate the polysaccharides.

It has been established that the amount of polysaccharides in mistletoe and their qualitative composition are not appreciably affected by the host tree from which the raw material was collected (apple, pear, poplar, willow, maple). The amounts of the polysaccharide fractions in the plants studied are given below:

	Mistletoe	Chinese parasol tree
WSPSs	4,4	4,2
PSs	[illegible]	[illegible]
HC	3,4	[illegible]

The main monosaccharides of the WSPSs and the PSs of leafy mistletoe shoots and the leaves of the Chinese parasol tree are glucose, mannose, xylose, galactose, and galacturnoic acid. We determined the amount of nitrogeneous bases in the species of plant studied (about 5%) by the procedure of T. A. Lukovnikova and A. I. Esyutina [4].

The WSPSs and Pss that had been isolated were subjected to hydrolysis with 2 N trifluoroacetic acid (TFA) at 120°C for 4 h. After the elimination of the TFA, the hydrolysates obtained were analyzed on a Biotronik LC 2000 amino acid analyzer (FRG) using a column with the cation exchange resin Ostion LGA (4 × 230 mm) at 80°C in a sodium citrate-borate-chloride buffer with pH 7.24. Detection was carried out with the aid of ninhydrin. The rate of pumping of the buffer was 16.8 ml/h and the rate of pumping of the ninhydrin 8.4 ml/h. The amount of glucosamine was calculated in relation to a standard solution of N-acetylglucosamine:

	Glucosamine content, %	
	WSPSs	PSs
Mistletoe on the following host tree		
pear	0,72	0,12
apple	0,54	0,13
willow	0,68	0,14
poplar	0,71	0,12
Chinese parasol tree		
leaves	1,25	0,62
inflorescences	0,32	0,15
fruit	0,42	0,20
seeds	0,31	,18

Pyatigorsk Pharmaceutical Institute. Translated from Khimiya Prirodnykh Soedinenii, No. 6, p. 826-827, November-December, 1990. Original article submitted February 16, 1990; revision submitted May 28, 1990.

0009-3130/90/2606-0705$12.50

Thus, the WSPS fractions of mistletoe and the leaves of the Chinese parasol tree are richest in glucosamine. The host tree has no appreciable influence on the amount of amino sugar mistletoe.

LITERATURE CITED

1. N. K. Kochetkov, The Chemistry of Biologically Active Natural Compounds [in Russian], Khimiya, Moscow (1970).
2. A. A. Rezchiukov, L. S. Tsivileva, and B. B. Dzantiev, "Isolation, Characterization, and immunoenzyme analysis of glucoamylase," in: Abstracts of the VIIIth All-Union Conference on the Chemistry and Biochemistry of Carbohydrates [in Russian], Pushchino (1987), p. 7.
3. E. D. T. Atkins, The Polysaccharides. Topics in Molecular and Structural Morphology, Vol. 8, Macmillan, New York (1985).
4. A. I. Ermakova, Methods for Biochemical Investigation of Plants [in Russian], Kolos, Leningrad (1972).

AN INVESTIGATION OF THE OIL OF Nicotiana tabacum SEEDS

A. U. Umarov, M. Kh. Khasanov, and Kh. T. Teshabaeva

UDC 547.915.665.3

Tobacco is sown with the aim of obtaining tobacco leaf in the Urgut region of Samarkand province. The average yield of the seeds of this crop in the main zones of cultivation (the Crimea, Transcaucasia, the Ukraine) amounts to 600 kg/ha [1]. The tobacco seeds are not used, although up to 5 thousand tons may be gathered each year in the Uzbek SSR. Physicochemical facts are necessary in order to draw up recommendations for the utilization of these wastes.

We have investigated the oil of tobacco seeds of the 1988 harvest collected after the removal of the leaves (ripe). To free them from nicotine, the seeds were treated in a supersonic apparatus at a velocity of flow of air of 1000 m/s. In the treating process, the upper seed coat is removed, as a result of which the seeds are freed from nicotine. The amount of nicotine was determined by generally adopted methods [2].

The moisture content of the seeds was 5.3% and the oil content at this moisture content 40.8%; calculated on the absolutely dry substance the oil content of the seed was 43.2%, close to figures given in the literature [1].

The oil was isolated from the comminuted seeds by extraction with petroleum ether (T_b 40-60°C) at room temperature, and its indices were determined by generally accepted methods [6]:

Density at 20°C, g/cm^3	0.9231
Refractive index, n^{20}	1.4758
Viscosity at (20°C), cP	54.28
Saponification No., mg KOH/g	193.56
Wijs iodine No., % I_2	143.82
Thiocyanogen No., % I_2	71.54
Hehner No., %	93.47
Unsaponifiable substances, %	1.24

To determine the qualitative and quantitative composition of the fatty acids they were isolated from the oil by saponification, and were converted by treatment by diazomethane into their methyl esters [4]. The fatty acid methyl esters were chromatographed on a LKhM-7

V. V. Kuibyshev Samarkand Cooperative Institute. Translated from Khimiya Prirodnykh Soedinenii, No. 6, p. 827-828, November-December, 1990. Original article submitted January 30, 1990.

0009-3130/90/2606-0706$12.50