FLAVONOIDS OF *Diospyros*

A. V. Gorobets, V. A. Bandyukova, and
G. M. Fishman

UDC 547.972

We have investigated the flavonoid composition of the leaves of *Diospyros kaki* Thunb. (variety Khachia), family *Ebenaceae* collected in May-June, 1983 in the environs of Batumi.

The freshly gathered leaves (2.0 kg) were exhaustively extracted with 96% ethanol. The combined ethanolic extracts were separated, and the aqueous residue was treated successively with petroleum ether, benzene, chloroform, diethyl ether, ethyl acetate, and n-butanol.

Flavonoids were detected in the last three fractions. Three compounds were isolated by column chromatography on silica gel (the eluents being chloroform and chloroform–methanol mixtures with increasing concentrations of the latter).

Substance (I) formed yellow crystals with the composition $C_{21}H_{20}O_{11}$, mp 175-178°C. UV spectrum, $\lambda_{max}^{CH_3OH}$, nm: 353, 265; + CH_3COONa 365, 266; + $AlCl_3$ 405, 275; + $AlCl_3$ + HCl 405, 275; + CH_3CNa 400, 280. A study of the products of acid hydrolysis showed the presence of kaempferol and D-glucose. Substance (I) gave no depression of the melting point in admixture with astragalin and was identified as kaempferol 3-O-β-D-glucopyranoside [1, 2].

Substance (II) formed yellow crystals with the composition $C_{21}H_{20}O_{12}$, mp 210-212°C. UV spectrum, $\lambda_{max}^{CH_3OH}$, nm: 360, 258. According to the results with ionizing and complex-forming additives, the substance had free OH groups at C-7 and C-5 and in the lateral phenyl radical. Quercetin and D-glucose were detected in the products of acid hydrolysis. The substance was identified as quercetin 3-O-β-D-glucopyranose (isoquercitrin) [2].

Substance (III) consisted of yellow crystals with the composition $C_{15}H_{10}O_5$, mp 277°C. UV spectrum, $\lambda_{max}^{CH_3OH}$, nm: 365, 268. According to the results of UV spectroscopy and alkaline degradation, the substance contained free hydroxy groups at C-5, C-7, C-3, and C-4', and it gave no depression of the melting point in admixture with kaempferol [1].

The flavonoid compositions of the leaves collected in June was more diverse, consisting of glycosides of three aglycones.

LITERATURE CITED

1. L. K. Klyshev, V. A. Bandyukova, and L. S. Alyukina, Plant Flavonoids, [in Russian], Alma-Ata (1978), p. 224.
2. T. J. Mabry, K. R. Markham, and M. B. Thomas, The Systematic Identification of Flavonoids, Springer, New York (1970), p. 354.

Pyatigorsk Pharmaceutical Institute. All-Union Scientific-Research Experimental Design Institute for the Preservation and Processing of Subtropical Fruits, Batumi. Translated from Khimiya Prirodnykh Soedinenii, No. 5, pp. 710-711, September-October, 1985. Original article submitted May 7, 1985.

0009-3130/85/2105-0669$09.50