4. R. K. Ibrahim and J. H. N. Towets, Arch. Biochem. Biophys., 87, 125 (1960).

FLAVONOIDS OF *Dianthus pseudosquarrosus*

V. N. Darmograi and S. V. Khimenko

UDC 615.32

We have investigated the epigeal part of *Dianthus pseudosquarrosus*, family Caryophyllaceae. The air-dry raw material was exhaustively extracted with 50% ethanol. The extract was evaporated until the ethanol had been driven off, and the aqueous residue was treated with chloroform. The purified extract was evaporated, the residue was dissolved in ethanol, and saponins were precipitated with a mixture of acetone and ether (1:1).

Chromatography of the extract in various solvent systems showed that the plant contained not less than 12 flavonoids giving dark brown fluorescence in UV light. When the spots were treated with a solution of zirconium nitrate, they fluoresced dull yellow, and on subsequent treatment with ammonia vapor the color intensified and differentiated into light green, yellow-orange, or lemon yellow. Some of the flavonoids were isolated by column chromatography on polyamide sorbent and "hydrocellulose" and also by preparative paper chromatography.

In the investigation of the compounds isolated we used: UV spectroscopy with diagnostic reagents [1], acid and enzymatic hydrolyses, comparison of the compounds isolated in various systems of solvents with authentic specimens of known flavonoids, and also literature information [2]. In a study of the aglycones, the acid hydrolysis of the extract and of the individual glycosides with 15% hydrochloric acid and with Kiliani's mixture [3] was performed.

The results of the investigations showed that flavonoids 1, 2, and 3 belonged to the flavone class with apigenin as the aglycone. The absorption bands in the ultraviolet spectra of alcoholic solutions were in the 270-275 and 330-335-nm ranges. Substance 1 with mp 235-236°C was identified as isosaponarin, substance 2 with mp 258-260°C as saponaretin, and substance 3 with mp 264-265°C as vitexin.

Ethanolic solutions of flavonoids 4, 5, and 6 had absorption bands in the UV region of the spectrum at 275-280 and 340-350 nm, and in all cases there was a "shoulder" in the 255-260-nm region, which is characteristic for luteolin derivatives. This conclusion was also confirmed by the results of acid hydrolysis. An investigation of the compounds mentioned enabled them to be identified as luteolin 7-glucoside (substance 4, mp 253-254°C), luteolin 7-diglucoside (substance 5, mp 248-250°C), and luteolin 5-glucoside (compound 6, mp 280-281°C).

The study of the plant is continuing.

LITERATURE CITED

1. V. I. Litvinenko and N. P. Maksyutina, Khim. Prirodn. Soedin., 420 (1965).
2. J. B. Harborne, Comparative Biochemistry of the Flavonoids, Academic Press, New York (1967).
3. H. Kiliani, Chem. Ber., 63, 2866 (1930).

I. P. Pavlov Ryazan' Medical Institute. Translated from Khimiya Prirodnykh Soedinenii, No. 4, pp. 522-523, July-August, 1978. Original article submitted April 27, 1978.

0009-3130/78/1404-0447$07.50