

T. I. Plekhanova, V. A. Bandyukova,
and F. Kh. Bairamkulova

UDC 547.972

We have investigated the fruit of *Rosa spinosissima* Rydb. (Scotch rose), family Rosaceae, collected in September, 1976, on the north-western slopes of the Dzhinal'skii range in the region of the town of Kislovodsk at a height of 900 m above sea level.

The fruit was crushed and the kernels were separated from the flesh. The kernels were dehydrated and the fatty oil was obtained from them by extraction with diethyl ether. The oil obtained (9.1% of the dry weight) consisted of an odorless liquid of light yellow color. On prolonged standing in the air, no films formed on glass. It was established by standard methods [1] that the oil had an acid number of 9.9, a saponification number of 97.1, and an ester number of 87.2. The flesh of the fruit contained 11.6% of lipids.

To determine the organic acids, the flesh of the fruit was heated with water at 80-90°C for 30 min and the nonvolatile carboxylic acids in the extract obtained were chromatographed on paper in the butan-1-ol-CH₃COOH-H₂O (100:24:10) system (system 1) in the presence of "markers." After the chromatogram had been treated with an alcoholic solution of Bromothymol Blue, citric, malic, and oxalic acids were detected. The total amount of acids was 8.8% (calculated as malic acid) [1].

The aqueous extract of the flesh of the fruit was also found to contain ascorbic acid (iodometric method) [1] in an amount of 1.93% (on the dry weight).

To extract the anthocyanins, the flesh of the fruit was treated with a 1% solution of hydrochloric acid in ethanol in the cold. By paper chromatography of the extract it was found to contain four substances with R_f 0.28, 0.30, 0.42, and 0.64 in the butan-1-ol-CH₃COOH-H₂O (4:1:5) system (system 2), and 0.54, 0.60, 0.81, and 0.89 in 15% CH₃COOH.

To separate the substances we used preparative paper chromatography. Substance (I) with R_f 0.20 (in system 2) had absorption maxima in UV light (1% HCl in C₂H₅OH) at 276, 365, and 535 nm, and no bathochromic shift was observed on the addition of aluminum chloride. Acid hydrolysis (3% HCl, 1 h) formed an aglycone with R_f 0.40 (in system 2), identical with delphinidin, and D-glucose. Substance (II) with R_f 0.64 (system 2) had λ_{max} 360, 525 nm (1% HCl in ethanol), and the addition of aluminum chloride led to a bathochromic shift by $\Delta\lambda + 20$ nm. On the basis of a positive reaction with the "cyanidin" reagent [3] and chromatography in the presence of a marker, it was established that it was cyanidin.

Flavonoids and proanthocyanidins have been isolated from the flesh of the fruit by extraction with 60% aqueous ethanol.

LITERATURE CITED

1. B. P. Pleshkov, Practical Handbook on Plant Biochemistry [in Russian], Moscow (1976).
2. S. Ranson, in: Biochemical Methods of Plant Analysis (ed. by M. I. Zaprometov) [in Russian], Moscow (1960), p. 408.
3. K. Hayashi, in: The Chemistry of Flavonoid Compounds (ed. by T. A. Geissman), Pergamon, Oxford (1962), p. 248.