FLAVONOIDS OF Phlomis pungens

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The results of a preliminary investigation of the herb Phlomis pungens Willd. (prickly Jerusalem sage), family Lamiaceae Lindl. [1] by paper chromatography in the 15% CH_3COOH (1) and butan-1-ol – $CH_3COOH - H_2O$ (4:1:5) (2) systems followed by inspection in UV light has shown that it contains not less than 12 substances of polyphenolic nature. On the basis of color reactions on paper, six of them have been assigned to flavonoids and the others to phenolic acid derivatives.

For a detailed study, the comminuted dried herbage of the prickly Jerusalem sage (2.0 kg) collected on the slopes of Mt. Mashuk in the environs of Pyatigorsk (June, 1973) was extracted exhaustively with 70% ethanol in an apparatus of the Soxhlet type. The ethanolic extract was distilled under vacuum to an aqueous residue, and the latter was freed from ballast substances with chloroform. The purified aqueous extract was treated with ethyl acetate, and then the ethyl acetate was distilled off to small volume and the combined flavonoids were precipitated with dry chloroform (3 to 4 volumes). The precipitate obtained was washed with chloroform and was dissolved in a small amount of methanol.

After 3-4 days, crystals of the combined flavonoids deposited which consisted of three substances (I, II, and III) giving a positive Bryant test [2] and not changing on acid hydrolysis. Substance (I) was obtained in the crystalline form after three or four recrystallizations from methanol, and substances (II) and (III) were obtained in small amounts from the methanolic mother solutions of the combined flavonoids by preparative paper chromatography in the HCOOH – ethyl acetate – H_2O (10:2:3) system (3).

Substance (I), with the composition $C_{16}H_{12}O_5$, mp 285-287°C, mp of the acetyl derivative 201-204°C.

Substance (II), with the composition $C_{15}H_{10}O_6$, mp 328-330°C, mp of the acetyl derivative 223-225°C.

Substance (III), with the composition $C_{15}H_{10}O_5$, mp 345-348°C, mp of the acetyl derivative 183-185°C.

On the basis of a study of the products of alkaline degradation and demethylation, the substances obtained (I-III) were identified as genkwanin, luteolin, and apigenin, respectively [3-5]. An investigation of the glycoside composition of the flavonoids of the prickly Jerusalem sage is continuing.

LITERATURE CITED

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