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ANTHRAQUINONES OF *Galium fagetorum*

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In a chromatographic study on paper and in a thin layer of sorbent in various solvent systems of a butanolic extract from the epigeal organs of the bedstraw species *Galium fagetorum* Klok., family Rubiaceae, we detected no less than 15 substances of anthraquinone nature.

The raw material for investigation (0.8 kg) was gathered in the phase of full flowering of the plant in the Crimea at the Angarskii pass and was preserved in butanol at the site of collection.

The anthraquinones were extracted from the raw material with butanol. The extract was evaporated in vacuum and the residue was dissolved in 96% ethanol and mixed with KSK silica gel (100 g), and this was washed with acid [1] and was left under a weight at room temperature to dry out. The dried mixture was ground to a powder and extracted in a Soxhlet apparatus successively with petroleum ether (40-70°C), benzene, and methanol. The extract obtained with petroleum ether was evaporated to dryness, dissolved in 400 ml of ether, and extracted repeatedly with 10% Na_2CO_3 solution. The alkaline solution was made acid with dilute hydrochloric acid, and the anthraquinones were extracted with ether.

Part of the ethereal extract (0.75 g), containing four substances of anthraquinone nature with R_f 0.31 (I), 0.37 (II), 0.42 (III), and 0.61 (IV) (toluene—acetone—50% acetic acid (4:1:0.5) system; Silufol plates), was dissolved in chloroform, and the solution was mixed with silica gel (8.0 g) and deposited on a column of silica gel (100.0 g).

The column was eluted with petroleum ether (40-70°C) and mixtures of it with chloroform, which yielded fractions 1-4 containing a mixture of anthraquinones.

Rechromatography of the individual fractions gave substances (I-III) in crystalline form: I — $C_{15}H_{10}O_4$ (253^+), mp 179-180°C (ethanol), R_f 0.31; (II) — $C_{15}H_{10}O_4$ (253^+), mp 300-301°C (ethanol), R_f 0.37; (III) $C_{14}H_8O_4$ (239^+), mp 289-290°C (ethanol), R_f 0.42.

The demethylation of (I) [2] yielded compound (III). On the basis of their physical and chemical properties, results of UV spectroscopy, and a comparison with authentic samples, substances (I), (II), and (III) were identified as 2-hydroxy-1-methoxyanthraquinone (I), rubiadin (II), and alizarin (III).

The study of the other components from this raw material is continuing.

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