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The epigeal part of the plant *Pyrethrum pyrethroides* (Kar. et Kir.) B. Fedtsch. ex Krasch. [1], gathered in the period of full flowering on the Hissar range (TadzhSSR) in July 1980 was extracted with chloroform (1:5). The concentrated extract was treated with 40% aqueous ethanol. After filtration, the lactones were extracted from the aqueous ethanolic solution with chloroform. The chloroform extract was separated by chromatography on alumina (1:30). The substances were eluted by the solvent system petroleum ether-ethyl acetate (9:1). Fractions with a volume of 700 ml were collected, and fractions 13-22 and 35-36 crystallized on standing. On recrystallization from hexane-ethyl acetate, fractions 13-22 yielded a substance with mp 187°C, composition $C_{17}H_{22}O_5$, R_f 0.38 (Silufol UV-254 plates; benzene-methanol (9:1) system). Its IR spectrum (KBr) contained absorption bands at (cm^{-1}) 3520 (hydroxy group), 1755 and 1670 (α,β -unsaturated γ -lactone), and 1740 and 1260 (ester group). All these facts, and also the color of the spot on spraying with sulfuric acid containing 1% of vanillin, recall the properties of cumambrin A [2, 3], and this was confirmed by direct comparison with an authentic sample [4].

When fractions 35 and 36 were recrystallized from hexane-ethyl acetate, colorless crystals deposited with mp 178-179°C, composition $C_{15}H_{20}O_4$, R_f 0.24. The IR spectrum had the absorption band of a hydroxy group (3500 cm^{-1}), and also of an α,β -unsaturated γ -lactone (1745 and 1670 cm^{-1}). On acetylation with acetic anhydride in pyridine, this substance formed the first substance (the IR spectra and melting points were identical). Consequently, the second lactone was cumambrin B [2, 3].

This is the first time that these lactones have been obtained from this plant.

LITERATURE CITED

1. Flora of the USSR [in Russian], Moscow-Leningrad, Vol. XXVI (1961), p. 256.
2. J. Romo de Vivar and F. A. Dias, *Tetrahedron*, 24, 5625 (1968).
3. M. A. Irwin and T. A. Geissman, *Phytochemistry*, 8, 305 (1969).
4. A. I. Yunusov, G. P. Sidiyakin, and D. Kurbanov, *Khim. Prir. Soedin.*, 655 (1978).

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