

Thus, the data given show that we have isolated an aliphatic terpene hydrocarbon the structure of which obeys the isoprene rule. The most probable structure for it is 2,6-dimethyl-1,4,7-octatriene. To this terpene hydrocarbon we have given the name achillene.

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BRITANNIN — A LACTONE FROM INULA BRITANNICA

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From the epigeal part of *Inula britannica* L. (British inula) family Compositae, collected in the flowering phase in the sinks of the northeastern outskirts of the Muyun-Kuma desert (close to Chu station, Dzhambul'skaya Oblast), we have isolated a colorless crystalline substance with the composition $C_{19}H_{26}O_7$, mp 189-191° C (from ethanol), $[\alpha]_D^{18} -22.88^\circ$ (c 2.3; chloroform), 1H₁abile. On chromatography in a thin layer of neutral alumina (activity grade IV) in the petroleum ether-benzene-chloroform-methanol (5:4:2:1) system it had R_f 0.2; and in the benzene-ethanol (9:1) system R_f 0.32 (spots revealed with a 0.5% solution of potassium permanganate in 0.5% sulfuric acid).

The IR spectrum of the substance had absorption bands at 3540 cm⁻¹ (OH group) and 1768 cm⁻¹ (carbonyl of a γ-lactone), broad bands in the 1710-1728 cm⁻¹ region (C=O), 1240-1270 cm⁻¹ (OCO), and an absorption band in the 1668 cm⁻¹ region (C=C-C=O). The NMR spectrum shows signals of tertiary and quaternary methyl groups (doublet at 0.95 ppm and singlet at 1.00 ppm), of two acetoxy groups (singlets at 2.03 and 2.22 ppm), and of an exocyclic ethylene group conjugated with the lactone carbonyl (doublets at 5.41 and 6.14 ppm) [1]. When the substance was hydrogenated with a Pt catalyst (Adams), one mole of hydrogen was absorbed to form a dihydro derivative $C_{19}H_{28}O_7$ with mp 222-224° C (from ethanol), 1H₁abile. The IR spectrum of the dihydro derivative had maxima at 3500 and 3530 cm⁻¹ (OH), 1775 (γ-lactone), 1745, 1705 (C=O), and 1260 cm⁻¹ (OCO), and the NMR spectrum lacked signals of an exocyclic methylene group.

The initial substance and its dihydro derivative dissolves in alkalis on heating, with the consumption of 3 moles of alkali, which confirms the spectral indication of the presence of a lactone ring and two ester groups. However, it has not yet been possible to isolate the hydrolysis products. Reduction of the dihydro derivative with lithium aluminum hydride led to a pentol $C_{15}H_{28}O_5$ with mp 248-250.5° C, 5H₁abile. The IR spectrum of the latter had a maximum at 3250-3450 cm⁻¹ and absorption bands of a γ-lactone, of OCO, and of C=O were absent.

The substance isolated is a new sesquiterpene lactone not previously described in the literature. We have called it britannin.

REFERENCE

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