CUMAMBRIN A – A SESQUITERPENE LACTONE FROM Handelia trichophylla

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We subjected dried inflorescences of the plant Handelia trichophylla Heimerl, family Compositae, growing in the Tashkent oblast, to exhaustive extraction with chloroform. The resin after the elimination of the solvent was triturated with hexane and ether; the resulting insoluble powder was chromatographed on neutral inactive alumina.

From a benzene eluate we isolated compound (I) with the composition $C_{17}H_{22}O_5$, mp 186-187°C (from ethanol), mol. wt. 306 (mass spectrometry), R_f 0.36 in the benzene–methanol (8 : 2) system on Silufol plates. The IR spectrum (tablets with KBr) has absorption bands at (cm^{-1}) 3520 (OH), 1755, 1625 (carbonyls of a γ-lactone and of an ester group), and 1670 (C=C).

On the basis of the features of the NMR, IR, and mass spectra of (I) and the products of its saponification, hydrogenation, and dehydrogenation, we have proposed for the lactone a structure coinciding with the structural formula of cumambrin A [1]. However, different melting points are given for this: 178°C [1] and 188-190°C with an acetyl derivative having mp 198-200°C [2].

A solution of compound (I) in acetyl chloride was kept in a sealed tube at 35-40°C for two days. This gave the acetyl derivative of the lactone (at a tertiary hydroxy) with the composition $C_{19}H_{24}O_6$, mp 197°C, IR spectrum, cm^{-1}: λ_{max}^{KBr} 1765, 1736, 1250 (γ-lactone and ester), 1660, 1630 (C=C).

Mixtures of compound (I) with samples of cumambrin A kindly given to us by J. Romo and T. A. Geissman melted with no depression of the temperature; the substances were also chromatographically identical.

Consequently, the lactone that we have isolated is identical with cumambrin A.

LITERATURE CITED

1. J. Romo, A. Romo de Vivar, and E. Dias, Tetrahedron, 24, 5625 (1968).
2. M. A. Irwin and T. A. Geissman, Phytochem., 305, 8 (1969).

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