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SHORT COMMUNICATION

SESQUITERPENOID LACTONES.

CHAMISSONIN FROM *AMBROSIA ACANTHICARPA* HOOK.

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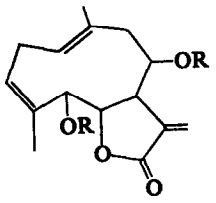
CHAMISSONIN, to which the structure (I) has been assigned, was first isolated from *Ambrosia chamissonis* (Less.) Greene.[1] It has now been found to be the major—almost the sole—sesquiterpenoid lactone in *A. acanthicarpa* Hook.[2] Indeed, thin-layer chromatograms of extracts of *A. chamissonis* and *A. acanthicarpa* are nearly identical.



(I) R=H
(II) R=CH_3CO

Ambrosia acanthicarpa Hook. is a common annual in California, and is a member of the tribe Ambrosieae[3] (or subtribe Ambrosiineae of the Heliantheae[4]). The sample studied was collected at about sea level in the vicinity of Anza State Park, San Diego County, California. A thin-layer chromatogram of a crude chloroform extract of the plant showed a prominent component that corresponded with authentic chamissonin. Extraction of the plant in the usual way[1] and chromatography of the sesquiterpenoid lactone fraction with benzene–chloroform and chloroform yielded fractions, the earlier ones of which contained several components in the R_f range of coronopilin and ambrosin, and later ones only chamissonin. The crude material crystallized but, as was noted earlier,[1] was difficult to purify satisfactorily. It was readily converted into the crystalline acetate, which was found to be identical with chamissonin diacetate (II) by melting point and chromatographic comparison with the

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[1] T. A. GEISSMAN, R. J. TURLEY and S. MURAYAMA, *J. Org. Chem.* 31, 2269 (1966).

[2] We are indebted to Dr. W. W. Payne, University of Illinois, for identifying the plant. An herbarium voucher bears the number TAG-62366-FRAX.

[3] W. L. JEPSON, *Manual of The Flowering Plants of California.* Associate Student's Store, University of California, Berkeley, California (1925).

[4] P. A. MUNZ and D. D. KECK (Editors), *A California Flora.* University of California Press, Berkeley, California (1959).

authentic material, and spectral properties. Too little plant material was available to permit separation in pure form of the other compounds from early column fractions; these will be investigated when the plant is again accessible.

Payne[5] has suggested that *A. chamissonis* (Less.) Greene and *A. acanthicarpa* Hook. are very closely related and have probably been independently derived from a common ancestor, conclusions that are fully substantiated by the close correspondence of their chemical constitution.

EXPERIMENTAL

A sample of 98 g of dried, whole plant of *Ambrosia acanthicarpa* Hook. was ground and extracted with $CHCl_3$ (cold), to yield a residue of 7·9 g of a dark green gum. This was dissolved in ethanol–water (1:4) and the clarified solution, separated from tars, was extracted repeatedly with $CHCl_3$. Evaporation of these extracts yielded 3·1 g of a yellow gum, which was chromatographed on neutral alumina (act. IV) with benzene–$CHCl_3$ mixtures, starting with benzene–$CHCl_3$, 1:1 and proceeding through chloroform to a final eluant of $CHCl_3$–methanol, 95:5. A group of intermediate fractions (benzene–$CHCl_3$ about 1:9) showed only chamissonin (by TLC); and although one of these yielded crystalline chamissonin when the residue obtained on evaporation was rubbed with ether, satisfactory crystalline material from the other fractions could not be obtained readily.

A portion of 1·1 g of the material from these fractions was acetylated in the manner described earlier.[1] The product, 0·71 g, crystallized from ethanol as shining leaflets, m.p. and mixed m.p. with chamisson diacetate, 174–175°. Comparison of the acetate with authentic material on TLC plates further confirmed their identity, and their i.r. spectra were identical.

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[5] W. W. PAYNE, Private communication.