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SHORT COMMUNICATION

ISOLATION OF HOPENONE-B FROM *EUPHORBIA CYPARISSIAS**

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Abstract—The occurrence in nature of hopenone-b, isolated from *Euphorbia cyparissias*, is reported for the first time.

SEVERAL triterpenoids have been reported[1] as constituents of *Euphorbia cyparissias* L. (Euphorbiaceae). A further investigation of the fraction yielding glut-5(6)-en-3-one has resulted in the isolation of another ketone which exhibited physical and spectral properties characteristic of hopenone-b.[2,3] Dehydration[2] of hydroxyhopanone from Dammar gum[4] gave a mixture of two isomers from which hopenone-b was isolated and demonstrated to be identical with the ketone from *E. cyparissias*. $LiAlH_4$ reduction of hopenone-b gave hop-22(29)-en-3β-ol as the major product. This is the first report of the occurrence in nature of hopenone-b. Moretenone, differing only in the orientation of the side-chain, has been reported from *E. lateriflora*.[5]

EXPERIMENTAL

M.ps. are uncorrected and were determined in sealed capillary tubes using a Büchi melting point apparatus. PMR spectra were obtained in $CDCl_3$ with a Varian A-60A spectrometer using TMS as internal standard. The mass spectrum was obtained with a Varian M-66 mass spectrometer (ionizing energy 70 eV).

Isolation and Identification of Ketone

Chromatography of material (220 mg) from mother liquors[1] of glut-5(6)-en-3-one on $AgNO_3$–Kieselgel plates gave additional glut-5(6)-en-3-one and a second ketone (68 mg) which on recrystallization ($CHCl_3$–acetonitrile) yielded plates, m.p. 220–221°; $[\alpha]_D + 85°$ (*c*, 0·80 in $CHCl_3$); positive Zimmerman test; ν_{max} (KBr) 1701 cm^{-1} ($-\overset{|}{C}=O$), 1638 and 883 cm^{-1} ($-\overset{|}{C}=CH_2$); PMR spectrum: δ 0·75 (3H), 0·96 (3H), 1·03 (6H), 1·08 (3H), 1·77 (3H), 4·81 (multiplet; 2H); mass spectrum: *m/e* 424 (M^+), 409 ($M-CH_3$), 381 (M-side chain), 205 (base peak), 189. (Found: C, 84·86; H, 11·24. Calc. for $C_{30}H_{48}O$: C, 84·84; H, 11·39 per cent.) This compound could be distinguished chromatographically ($AgNO_3$–Kieselgel plates) from moretenone and zeorininone-b kindly supplied by Dr. H. N. Khastgir and Dr. I. Yosioka respectively.

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Hydroxyhopanone obtained[4] from Dammar gum was dehydrated using $POCl_3$ in pyridine.[2] The product, a mixture of hopenone-a and hopenone-b, was separated by chromatography on $AgNO_3$–Kieselgel plates. Hopenone-b from the slower-moving band crystallized from $CHCl_3$–acetonitrile as plates, m.p. 219–222°, $[\alpha]_D + 86°$ (*c*, 0·65 in $CHCl_3$), and was identical (mixture m.p., i.r. PMR, TLC comparisons) with the ketone from *Euphorbia cyparissias*. Tsuda and Hattori[3] report m.p. 219–220° for this compound.

Hydride Reduction of Hopenone-b

Hopenone-b (12 mg) in anhydrous ether (10 ml) was heated under reflux for 2 hr with $LiAlH_4$ (15 mg). The major product was isolated by separation on Kieselgel plates and recrystallized from $CHCl_3$–acetonitrile to give hop-22(29)-en-3β-ol, m.p. 255–261°; ν_{max} (KBr) 3488, 1638, 886 cm^{-1}. (Found: C, 84·40; H, 11·96. Calc. for $C_{30}H_{50}O$: C, 84·44; H, 11·81 per cent.)

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