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The Structure of Diosbulbine*

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A novel norditerpene lactone, diosbulbine, has been isolated from the tubers of *Dioscorea bulbifera* Linn. The structure (III) for the diterpene lactone has been assigned on the basis of spectroscopic and degradative evidence.

A REPORT that the boiled tubers of *Dioscorea bulbifera* Linn. are eaten by some of the tribal people in India in times of food scarcity and are believed to have hunger-suppressing property¹ led us to the chemical investigation of this plant. Chakravarti *et al*² have recorded the isolation of diosgenin from the roots.

Habermehl *et al*³ have recently disclosed the isolation of three compounds from *D. bulbifera* and have carried out X-ray structural investigation on one of these and shown it to have the structure (IV). We wish to report in this communication the work on the structure elucidation of a novel diterpene lactone isolated from the tubers of *D. bulbifera*†.

By extracting the boiled tubers (see experimental) with chloroform, a crystalline compound designated diosbulbine has been obtained in 0.16% yield based

on dry weight of the tubers. Diosbulbine, mp 295°, $[\alpha]_D +78^\circ$, analyses for $C_{19}H_{20}O_6$ (M^+ at m/e 344) and shows dimorphic crystalline forms depending on the solvent of crystallization. It gives colourless rhombic cubes from acetic acid and needles from methylethyl ketone. The two forms show different IR spectra in nujol or KBr, but their solution spectra in acetonitrile are identical. Diosbulbine gives a pink Ehrlich colour reaction indicating the presence of furan ring⁴. This is also confirmed by its UV spectrum; λ_{max}^{EtOH} 210 μ ; ϵ 5800; IR bands 3130, 1590, 1510, 880 cm^{-1} and NMR (DMSO- d_6) signals at 7.66, 7.56 (1H each), 6.88 δ (1H). The signals at 7.66 and 7.56 represent the two aromatic α -protons and the peak at 6.88 δ the β -proton of a β -monosubstituted furan⁵.

The IR spectrum (nujol) shows carbonyl peaks at 1798 and 1790 cm^{-1} , indicative of two saturated γ -lactones. The IR spectrum does not show the presence of any other carbonyl or hydroxyl bands and no active hydrogen could be found at rt or at 100°. The sixth oxygen of diosbulbine was, therefore, inferred to be present as an ether oxygen.

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†After submission of the manuscript we have noticed a publication on the constitution and configuration of diosbulbin-A, -B and -C; Kumori, T., Setoguchi, S. & Kawasaki, T., *Chem. Ber.*, **101** (1968), 3096.

