

NAPHTHAQUINONES AND TRITERPENOIDS OF *EUCLEA DIVINORUM*

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Key Word Index—*Euclea divinorum*; Ebenaceae; naphthaquinones; triterpenoids; diosindigo A; 2-methylnaphthazarin; 7-methyl-juglone; diospyrin; lupeol; betulin.

Plant. *Euclea divinorum* Hiern was collected 38 km from Lourenço Marques, Mozambique, on the route to Namaacha. Voucher specimens are deposited in the Herbarium of the Laboratory of Botany, University of Lourenço Marques. **Plant material examined.** **Roots.** **Previous work.** A sample of the plant, from South Africa, shown to contain 7-methyljuglone, mamegakinone, diospyrin and isodiospyrin in the roots but the stems and fruits contained no quinones [1].

Present work. Dried powdered roots of *E. divinorum* were extracted (Soxhlet) with petrol (bp 50–70°). The extract was concentrated under red pres and submitted to preparative TLC on silica in petrol saturated with MeOH. Three bands were formed, I, II, III, by order of decreasing R_f values. The silica corresponding to each band was removed from the plates and extracted with CHCl_3 , the chloroform extracts then being rechromatographed under the same conditions. Band I yielded diosindigo A and band II 2-methylnaphthazarin. The CHCl_3 extract corresponding to band III was chromatographed on silica in CHCl_3 , yielding two bands (IIIa, IIIb). Band IIIa yielded 7-methyljuglone and band IIIb diospyrin. All substances were identified by direct comparison with authentic samples (mp, TLC, UV, IR). It is interesting to note that 2-methylnaphthazarin, a somewhat rare substance [2], was found earlier by us in *E. lanceolata* E. Mey ex D C: [3] and in *E. pseudobenus* E. Mey ex DC. [4]. Diosindigo A [5], a common constituent of *Diospyros* spp. [6], has also been isolated from four *Euclea* spp. [1,7].

Another portion of the petrol extract was chromatographed over silicic acid, and the column eluted with solvents of increasing polarity. Petrol– C_6H_6 (8:2)

removed triterpenoid compounds. The solvent was evaporated under red pres and residue obtained was chromatographed over alumina. Elution with petrol– C_6H_6 (3:7; 2:8) gave lupeol, $M^+ = 426$, mp 214–215° (MeOH and Me_2CO), $[\alpha]_D^{20} + 27.3^\circ$; acetate, $M^+ = 468$, mp = 212° (Me_2CO), $[\alpha]_D^{20} + 47.1^\circ$ (CHCl_3) while C_6H_6 – CHCl_3 (2:8) and CHCl_3 yielded betulin, $M^+ = 442$, mp 258–260° (Me_2CO) $[\alpha]_D^{20} + 19^\circ$ (pyridine); diacetate $M^+ = 526$, mp 219–220° (Me_2CO), $[\alpha]_D^{20} + 21.9^\circ$ (CHCl_3). The identifications were confirmed in all cases by direct comparison with authentic samples (TLC, IR, NMR).

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STEROLS AND TRITERPENES FROM THE FRUIT OF *ARTOCARPUS ALTILIS*

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Key Word Index—*Artocarpus altilis*; Moraceae; breadfruit; sterols; triterpenes; cycloartenol; α -amyrin; cycloart-23-ene-3 β ,25-diol; cycloart-25-ene-3 β ,24-diol.

Plant. *Artocarpus altilis*. **Source.** Hunts Point Fruit Market, Bronx, New York. **Use.** Foodstuff. **Previous work.** Isolation of cyclopropane sterols from the bark and sister species [1].

Present work. The fresh fruit (1.4 kg) was extracted with CHCl_3 . The solvent evaporated to give a residue (6.8 g) which was saponified. The non-saponifiable extract (3.3 g) in Et_2O was subjected to preparative layer