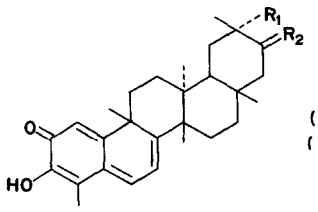
dienone triterpenes in the trunk bark and particularly tingenone (0·22%), which has been shown to be an inhibitor of tumor growth. [5,6].



(1) R_1 = COOMe, R_2 = H_2
(2) R_1 = H, R_2 = O

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NEUTRAL TRITERPENOIDS FROM *MELALEUCA LEUCADENDRON*

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Key Word Index—*Melaleuca leucadendron*; Myrtaceae; pentacyclic triterpenoids.

Plant. Melaleuca leucadendron L. Known as paperbark tree. *Previous work.* Betulinic acid from bark [1] and in that of *M. parviflora, M. pubescens, M. rhaphiophylla, M. cuticularis* and *M. viminea*; melaleucic acid [2] [3] also isolated from the last three species.

Present work. The light petrol extracts of both the leaves and stems of *M. leucadendron* were examined separately by column chromatography on alumina. The former gave friedelin, sitosterol, betulin and uvaol according to the order of elution from the column. The latter similarly yielded *epi*taraxeryl acetate, friedelin, taraxerone, taraxastenone, sitosterol and betulin. Neither *epi*taraxeryl acetate nor taraxastenone has formerly been isolated as a natural product.

EXPERIMENTAL

IR spectra were recorded for KBr discs; NMR spectra in $CDCl_3$ solutions at 60 MHz using TMS as internal standard; optical rotations in $CHCl_3$ solutions. Light petrol had bp 60–80°. Known compounds were identified by TLC, mmp, IR and MS spectral comparisons with authentic samples.

Leaves. Milled air-dried leaves (7.2 kg) were extracted 2× with light petrol, combined extracts were concentrated and chromatographed on alumina (1 kg). Elution with light petrol gave friedelin (0.9 g), mp 261–262°, with light petrol–C_6H_6 (1:1), sitosterol (0.7 g), mp 139–140°, with C_6H_6, betulin (0.1 g), mp 253–255°, and with C_6H_6–$CHCl_3$ (1:1), needles (0.035 g), mp 221–223° (from $CHCl_3$–MeOH), $[\alpha]_D$ + 77.0°, M^+ 442, IR ν_{max}: 3380 (OH), 1650, 820 cm^{-1} (>C=CH–), identical with uvaol prepared from methyl ursolate by LAH reduction.

Stems. Milled air-dried stems (9 kg) were extracted with light petrol and chromatographed on alumina (1.5 kg) as for the leaves. Early elution with petrol yielded plates (0.01 g), mp 163–164° (from light petrol), $[\alpha]$ – 37.0° (Found: M^+ 468. Calc. for $C_{32}H_{52}O_2$: M^+ 468). IR ν_{max}: 1740, 1245 (OAc), 3070, 1650, 818 cm^{-1} (>C=CH–), identical with a sample of *epi*taraxeryl acetate prepared from taraxerone (a soln of freshly distilled Al isopropoxide (0.5 g) and taraxerone (0.15 g) in iso PrOH (50 ml) was refluxed at 110° for 2 hr. The product was acetylated and the mixture (0.1 g) separated by preparative TLC into *epi*taraxeryl acetate (0.015 g), mp 165–166° (from $CHCl_3$–MeOH), and taraxeryl acetate (0.083 g) mp 303–304°). Further elution with light petrol gave friedelin (0.3 g), then taraxerone (0.07 g), mp 248–250°, and finally needles (0.03 g), mp 184–185° (from light petrol), $[\alpha]_D$ + 117.0° (Found: M^+ 424. Calc. for $C_{30}H_{48}O$: M^+ 424). IR ν_{max}: 1720 cm^{-1} (>C=CH_2), identical with taraxastenone obtained by oxidation of taraxasterol with Jones' reagent. The needles (0.02 g) was stirred with $NaBH_4$ in isopropanol (20 ml) for 2 hr. The product 0.015 g), mp 224–226°, IR ν_{max}: 3600 (OH), 3080, 1650, 880 cm^{-1} (>C=CH_2) was identical with taraxasterol. Elution with petrol–C_6H_6 (1:1) afforded sitosterol (0.01 g), and with C_6H_6 betulin (0.07 g).

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