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DITERPENOIDS IN *ABIES ALBA*

J M. RIBO M. R MITJA and J RAMENTOL
Departamento de Quimica Organica Facultad de Ciencias Universidad de Barcelona, Spain

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Plant Abies alba Mill *Source.* Setcases (Gerona). *Previous work* Lipids in heartwood.[1]
Plant part examined Heartwood Extracted with Et_2O and then with acetone. From the non-saponificable fraction were separated, the straight-chain lipids by urea complex formation, and the phytosterols via their digitonides. The hydroxylated fraction of the straight-chain compounds were identified as C_{18}-C_{28} *n*-fatty alcohols (by GLC on two columns of the TMS ethers) with C_{22} 52%, C_{24} 27%, C_{26} and C_{28} 5% as main components The phytosterol fraction was composed of sitosterol and campesterol (1 2 1) (GLC–MS). The rest of the non-saponificable fraction was chromatographed on silica, and separated into several fractions that were further purified by column chromatography. We have isolated a significant amount of 13-epimanool (IR, NMR ($DCCl_3$); $[\alpha]_D$ + 50°; 3,5-dinitrobenzoate; m.p 117-118°, $[\alpha]_D$ + 30°). It has been reported[2] that the PMR ($DCCl_3$) for manool and 13-epimanool are identical, we have found that when the spectra are run in CCl_4 the exocyclic double bonds give for manool δ 4 73 and 4 43 and for 13-epimanool 4·75 and 4·50

Small amounts of abieta-8,11,13-triene were also isolated (MS; IR; NMR; $[\alpha]_D$ + 45°) In the ketone fraction, isolated by column chromatography abieta-8,11,13-trien-7-one was identified by GLC–MS and isolation of its 2,4-DNP (M^+, *m/e* 464·242341, error 3 ppm; λ_{max} (EtOH) 384 nm (log ϵ 4·4); NMR; m p 235–237°[3] and m.p 239-240° after fast cooling[4]).

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[1] GRANADOS, R., RIBO, J M and TORRES, E (1973) *Phytochemistry* **12**, 1496
[2] SWAN, E P (1967) *Can J Chem* **45**, 1588
[3] DEFAYE-DUCHATEAU, G (1964) *Bull Soc Chim France* **7**, 1469
[4] SCHAFFNER, K *et al* (1956) *Helv Chim Acta* **39**, 174