

ester by chromatography on silica gel-AgNO₃ or by preparative GLC: m.p. 81° (mixed m.p. with pure specimen), MS 316 (M⁺), identical *T_R* on GLC (crossed injection with an authentic sample).*

The co-occurrence of kaurene, kaurenol, kaurenal and kaurenoic acid in the same plant is novel and supports the theory involving biogenetic transformation of kaurene into kaurenoic acid and then into gibberellic acid.

Acknowledgement—This work was supported by C.N.R., National Research Council, Roma, Italy.

* We thank Dr. Jan St. Pyrek (Institute of Organic Chemistry, Polish Academy of Sciences, Warsaw, Poland) for a sample of methyl (–)-kaur-16-en-19-oate.

Phytochemistry, 1971, Vol. 10, p. 1166 to 1167. Pergamon Press. Printed in England.

MELIACEAE

THE ISOLATION OF ANGUSTINOLIDE FROM *GUAREA TRICHILIOIDES* L.

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(Received 7 July 1970)

Abstract—The occurrence of the tetranortriterpenoid, angustinolide, in the seeds of *Guarea trichilioides* L. as well as minor amounts of β -sitosterol in the bark and wood extracts are recorded.

Plant. *Guarea trichilioides* L.—*Meliaceae*.

Occurrence. Tropical regions; found in Rio de Janeiro, Minas Gerais, Matto Grosso, Brazil.

Source. Jardim Botânico de Rio de Janeiro, Rio de Janeiro, Brazil.

Uses. Medicinal, helminthic.¹

Previous work. Toxic principle in the fruits,² on sister species.^{3–6}

Seeds. (900 g) The light petrol and CHCl₃ extracts (102 g) were chromatographed on silica columns. The benzene-CHCl₃ 1:1 and the CHCl₃ eluates gave 1.4 g of angustinolide⁷ (0.15%), m.p. 168–170° (MeOH), mixed m.p., co-chromatography and i.r. spectra with an authentic sample.

Bark. (2.5 kg) The petrol extract furnished an oily residue (12 g, 0.48%). The then defatted material was treated with MeOH under reflux and the extract (8.6 g) chromatographed (SiO₂): β -sitosterol (0.006%) from the benzene eluates. Elutions with CHCl₃ and MeOH afforded low yields of complex mixtures which proved difficult to resolve.

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Wood. (500 g) Chromatography (SiO_2) of the petrol extract (1 g) gave β -sitosterol (0.02%) and of the MeOH extract (5 g) complex mixtures which were not further investigated.

Acknowledgements—The authors wish to thank Dr. Graziella M. Barroso and Dr. T. C. Rizzini for supplying the plant material. A research grant from the Conselho Nacional de Pesquisas is gratefully acknowledged. One of us (CR) is indebted to the Fundação de Amparo a Pesquisa do Estado de São Paulo for a doctoral fellowship. The technical assistance of Mrs. Kazuko Kajibata Gasta and of Messrs. Teodomiro Vieira Santos, Sebastião Ribeiro and Alípio Raul de Silva is appreciated.

Phytochemistry 1971, Vol. 10, pp. 1167 to 1169. Pergamon Press. Printed in England.

RUTACEAE

A QUINOLONE ALKALOID FROM *ORICIA SUAVEOLENS*

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(Received 30 June 1970)

Abstract—The timber of *Oricia suaveolens* has been found to contain 6,7-dimethoxy-*N*-methylflindersine, which has been synthesized. Roots of *Clausena anisata* yielded the known coumarins imperatorin and coumarrayin.

Oricia suaveolens (Engl.) Verdoon is a small under-storey tree locally common in West Africa, belonging to the family Rutaceae. In the course of work designed to find new limonoids, we extracted the timber of this tree. Chromatography of the light petroleum extract gave a new compound which we call oricine, m.p. 150–155°. The mass spectral molecular weight was 301; elemental analysis suggested the formula $\text{C}_{17}\text{H}_{19}\text{O}_4\text{N}$. The NMR spectrum showed two methoxy groups at about δ 4.0, a methyl group at δ 3.7, two coupled vinyl protons ($J = 10$ cycles/sec) at δ 5.48 and 6.75, two single proton singlets at δ 6.73 and 7.31, and a six proton singlet at δ 1.53. Catalytic hydrogenation gave dihydro-oricine, m.p. 150°, in which the two vinyl doublets were missing, being replaced by two triplets at δ 1.83, 2.65 each corresponding to two hydrogen atoms. The i.r. spectrum of oricine (ν_{max} 1630 cm^{-1}) suggested a quinolone, the u.v. spectrum (λ_{max} 260, 355, 373 nm) was similar to that of flindersine (Ia).¹

Since the two aromatic protons are not strongly coupled, we assumed they were *para* to each other, which means the methoxy groups must be at positions 6 and 7 of the benzene ring. The final methyl group can be accommodated as an *N*-methyl group, which is shifted downfield from the usual position of an amide methyl by the deshielding due to the aromatic nucleus. Consequently we concluded that oricine was 6,7-dimethoxy-*N*-methylflindersine (Ib).

¹ R. F. C. BROWN *et al.*, *Australian J. Chem.* **7**, 348 (1954).