

## MELIACEAE

TETRANORTTRITERPENOIDS FROM *CABRALEA EICHLERIANA*

R. ZELNIK

Serviço de Química Orgânica, Institute Butantan, São Paulo, Brasil

(Received 10 December 1971)

*Occurrence.* Paraiba-São Paulo. *Source.* Horto Florestal, Serra da Cantareira, São Paulo. *Previous work.* On sister species.<sup>1</sup>

*Seeds* (1.9 kg). The petrol extracts gave 334 g (17.6%) of oil. The defatted material was extracted with  $\text{CHCl}_3$  and the viscous residue treated with petrol. The resulting crystalline-like precipitate (75 g), m.p. 70–88°, was chromatographed on silica gel columns. The benzene– $\text{CHCl}_3$  1:1 eluates furnished 9.77 g (0.51%) of angustinolide (fissinolide),<sup>2</sup> m.p. 168–174° (MeOH) while the benzene– $\text{CHCl}_3$  1:2 eluates yielded 2.6 g (0.13%) of 3 $\beta$ -hydroxy-mexicanolide,<sup>3</sup> m.p. 190–193° (Et<sub>2</sub>O). These compounds were identified by direct comparison with authentic materials by m.m.p., co-chromatography and IR analysis.

This is the second example in which the 3 $\beta$ -alcohol related to mexicanolide has been obtained as a natural product.<sup>4</sup>

*Acknowledgements*—The technical assistance of Messrs. Sebastião Ribeiro, Teodomiro Vieira Santos, José Carneiro de Lima and Alípio Raul da Silva is appreciated. Our thanks are due to Dr. Calvino Mainieri for supplying the plant material and to Dr. C. T. Rizzini for classification of the species. A research grant No. 10.468/68 from the Conselho Nacional de Pesquisas is gratefully acknowledged.

<sup>1</sup> J. D. CONNOLLY, K. H. OVERTON and J. POLONSKY, *Prog. in Phytochem.* **2**, 385 (1970).

<sup>2</sup> D. LAVIE, E. C. LEVY, C. ROSITO and R. ZELNIK, *Tetrahedron* **26**, 219 (1970); R. ZELNIK and C. ROSITO, *Tetrahedron Letters* 6441 (1966).

<sup>3</sup> J. D. CONNOLLY, R. MCCRINDLE and K. H. OVERTON, *Tetrahedron* **24**, 1489 (1968).

<sup>4</sup> R. ZELNIK and C. ROSITO, *Phytochem.* **10**, 1955 (1971).

*Key Word Index*—*Cabralea eichleriana*; Meliaceae; triterpenes; angustinolide; 3- $\beta$ -hydroxymexicanolide.

## RUTACEAE

CHLOROFORM-SOLUBLE ALKALOIDS FROM THE ROOT BARK OF *FAGARA CHALYBEA*

F. FISH and P. G. WATERMAN

Division of Pharmacognosy and Forensic Science, Department of Pharmaceutical Chemistry, University of Strathclyde, Glasgow G1 1XW.

(Received 24 December 1971)

*Plant.* *Fagara chalybea* Engl. (Synonym; *Zanthoxylum chalybeum* Engl.). *Source.* Collected in Kenya for the Tropical Products Institute, London and authenticated at

source. Voucher specimen FF 12 has been deposited with the Herbarium of the Pharmaceutical Society at the University of Bradford, England. *Occurrence.* The savanna lands of tropical East Africa. *Uses.* Powdered root bark applied to swellings and a decoction is used to produce vomiting in fever.<sup>1</sup> Reported<sup>2</sup> to be used in the Chua district of Uganda as a substitute for quinine. *Previous work.* Skimmianine, angoline, angolinine and three other bases reported by TLC.<sup>3</sup>

*Discussion.* Ground root bark (400 g) extracted with light petroleum (40–60°) and then with  $\text{CHCl}_3$  to exhaustion. Examination of the extracts by TLC (3 systems) indicated the presence of three bases. The bulked extracts were concentrated and extracted with 1 N HCl. A yellow precipitate was formed in the aqueous layer on standing and yielded chelerythrine chloride (1.2 g) (m.p. 202–203°) identical by m.m.p., UV and IR with an authentic sample. The aqueous extract was made alkaline and partitioned with  $\text{CHCl}_3$  to yield skimmianine (7 mg) (m.p. 176°) identical by m.m.p., UV and IR with an authentic sample. The third base could not be isolated but appeared by TLC (3 systems) to be identical with an authentic sample of nitidine. The isolation of chelerythrine and the probable occurrence of nitidine rather than angoline and angolinine further supports the hypothesis that the latter are artefacts.<sup>4</sup>

*Acknowledgements*—We thank Mr. A. G. Kenyon of the Tropical Products Institute for arranging the supply of bark and to Miss R. J. McMillan for her technical assistance.

<sup>1</sup> J. M. WATT and M. G. BREYER-BRANDWIJK, *The Medicinal and Poisonous Plants of Southern and Eastern Africa* (2nd Edition), p. 919, Livingstone, Edinburgh (1962).

<sup>2</sup> I. R. DALE and N. J. EGDELING, *The Indigenous Trees of the Uganda Protectorate*, p. 363, Government Printers, Entebbe, Uganda (1952).

<sup>3</sup> J. M. CALDERWOOD and F. FISH, *J. Pharm. Pharmac.* **18**, Suppl. 119S (1966).

<sup>4</sup> F. FISH and P. G. WATERMAN, *Phytochem.* **10**, 3322 (1971).

*Key Word Index*—*Fagara chalybea*; Rutaceae; alkaloids; chelerythrine; skimmianine; nitidine.

---

Phytochemistry, 1972, Vol. 11, pp. 1867 to 1868. Pergamon Press. Printed in England.

## MONOCOTYLEDONAE

### GRAMINEAE

#### CHRYSOERIOLOID FROM BARLEY SEEDS

I. S. BHATIA, G. P. KAUSHAL and K. L. BAJAJ

Department of Chemistry and Biochemistry, Punjab Agricultural University, Ludhiana,  
India

(Received 21 December 1971)

*Previous work.* Pelargonidin, cyanidin and delphinidin in pericarp and aleurone tissues.<sup>1</sup> Cyanidin-3-arabinoside,<sup>2</sup> saponarin and orientin,<sup>3</sup> luteonarin and luteonarin-3'-methyl ether<sup>4–5</sup> from leaves.

<sup>1</sup> B. D. MULLICK, D. G. FARIS, V. C. BRINK and R. M. ACHESON, *Can. J. Plant Sci.* **38**, 445 (1958).

<sup>2</sup> M. METCHE and E. URION, *Brauwiss.* **14**, 227 (1961).

<sup>3</sup> M. K. SEIKEL and T. A. GEISSMAN, *Arch. Biochem. Biophys.* **71**, 17 (1957).

<sup>4</sup> M. K. SEIKEL and A. J. BUSHNELL, *J. Org. Chem.* **24**, 1995 (1959).

<sup>5</sup> M. K. SEIKEL, A. J. BUSHNELL and R. BIRZGALIS, *Arch. Biochem. Biophys.* **99**, 450 (1962).