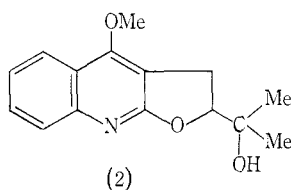
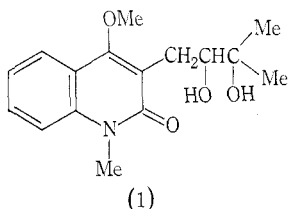


THE IDENTIFICATION OF A QUINOLONE ALKALOID FROM *CITRUS MACROPTERA* (RUTACEAE)

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Citrus macroptera Montr. (family Rutaceae) is a small rain-forest tree occurring in New Guinea. Fractionation of the crude bark alkaloids, isolated in approximately 0.02% yield, has given an alkaloid, m.p. 140–141°, $[\alpha]_D -15^\circ$ in chloroform, which has been shown by spectroscopic evidence to be (1). The structure of the alkaloid has been confirmed by its identification with the product obtained from reaction of the methiodide of platydesmine (2) with alkali.¹ The alkaloid edulinine,^{2,3} isolated



from *Casimiroa edulis* (family Rutaceae), has also been shown to be (1), but as the optical rotation of edulinine does not appear to have been recorded, it is not known whether the alkaloid now isolated from *Citrus macroptera* is edulinine or its optical enantiomer. Apart from this uncertainty, the n.m.r. data and other physical constants determined for edulinine and the *C. macroptera* alkaloid are in close agreement.

The alkaloid (1) seems to be the first isolation from a *Citrus* species of an alkaloid closely related to the quinolone and acridone alkaloids which are typical of many other genera of the Rutaceae.⁴

Since submission of this Communication, the isolation of edulinine from *Eriostemon trachyphyllus* (Rutaceae) has been recorded.⁵

Experimental

Bark of *Citrus macroptera* Montr. was collected from a small tree (15 ft high, 3 in. in diameter) at the edge of rain forest bordering Crooked Creek, about 4 miles SW. of Bulolo. A herbarium voucher specimen (TGH10909) has been retained at the Herbarium, Lae.

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¹ Johns, S. R., and Lamberton, J. A., *Aust. J. Chem.*, 1966, **19**, 1991.

² Iriarte, J., Kincl, F. A., Rosenkranz, G., and Sondheimer, F., *J. chem. Soc.*, 1956, 4170.

³ Toube, T. P., Murphy, J. W., and Cross, A. D., *Tetrahedron*, 1967, **23**, 2061.

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⁵ Lassak, E. V., and Pinhey, J. T., *Aust. J. Chem.*, 1969, **22**, 2175.

Extraction of the milled, dried bark (10 kg) by the method previously described⁶ gave 1.8 g crude alkaloids. Although thin-layer chromatography indicated the presence of several constituents, chromatography on neutral alumina afforded only one alkaloid in nearly pure state. A series of chloroform-eluted fractions were shown by t.l.c. to have a common major constituent, and crystallization first from diethyl ether and then from ethyl acetate gave alkaloid (1) as colourless prisms, m.p. 140–141°, $[\alpha]_D -15^\circ$ (c, 0.10 in CHCl_3). The 100-MHz n.m.r. spectrum (CDCl_3 solution; TMS δ 0.00) showed signals at δ 1.31 (6H, s, CMe_2), δ 3.70 (3H, s, NMe), δ 3.95 (3H, s, OMe), and δ 7.10–7.90 (4H, extended multiplet; aromatic protons).

The alkaloid (1) was identical (m.p. and mixed m.p., n.m.r. and i.r. spectra) with a sample of the diol (1) prepared from platydesmine methiodide by reaction with 5% aqueous sodium hydroxide solution.¹ When previously isolated,¹ the diol was obtained as an incompletely purified intermediate, m.p. 125°, and it was only characterized spectroscopically. The purified material had the same physical constants as alkaloid (1) and the optical rotation was of the same magnitude, $[\alpha]_D -17^\circ$ (c, 0.34 in CHCl_3).

Acknowledgment

The authors are indebted to Dr T. G. Hartley for the collection and identification of *C. macroptera*.

⁶ Johns, S. R., Lamberton, J. A., and Sioumis, A. A., *Aust. J. Chem.*, 1966, **19**, 2331.