

# THE CHEMICAL CONSTITUENTS OF AUSTRALIAN *FLINDERSIA* SPECIES\*

## XIV. THE CONSTITUENTS OF *FLINDERSIA ACUMINATA* C. T. WHITE

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*Flindersia acuminata* C. T. White, also commonly known as silver silkwood, Putt's pine, Paddy King's beech, and icewood, is a large tree occurring in the rain-forests of the Johnstone River and Atherton Tableland of north Queensland. The timber, which is light, soft, and silver-white, is used in cabinet-making.

Systematic extractions of the bark, leaves, and wood have been carried out and a number of constituents isolated and identified. From the bark, dictamnine (0.0003%), maculine (0.0003%), and hesperidin (0.085%) were obtained; in addition, the ubiquitous sitosterol (0.02%) and hexacosanol (0.006%), together with a trace of an unidentified yellow pigment were isolated. The leaves yielded hesperidin (0.17%), sitosterol (0.17%), and triacontanoic acid (0.013%) but the wood, only hesperidin (0.1%) and sitosterol (0.005%). A search for quaternary furoquinoline alkaloids of the type described by Price (1959), in each of the plant parts, gave negative results.

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### Experimental

The substances isolated were identified by direct comparison (mixed m.p.'s and i.r. spectra) with authentic specimens. The general procedure for extraction and isolation has been outlined in Part XII of this series (Ritchie, Taylor, and Willcocks 1960).

(a) *Extraction of the Bark*.—The light petroleum extract of the bark (32.4 kg; C.S.I.R.O. SN 6261) on concentrating and keeping at 0 °C deposited a small amount of yellowish brown material, from which dilute NaOH extracted a yellow pigment. After repeated recrystallization from methanol, it formed yellow needles, m.p. 199–200 °C (Found: C, 62.7; H, 4.9; O, 32.2%;  $\text{OCH}_3$ , nil. Calc. for  $\text{C}_{18}\text{H}_{16}\text{O}_7$ : C, 62.8; H, 4.7; O, 32.5%) but insufficient material remained for further work.

The crude alkaloid fraction after combination with a similar fraction from the ether extract was chromatographed on alumina, yielding dictamnine (0.1 g) and maculine (0.1 g).

After removal of the acidic and phenolic fractions, which were dark intractable gums, the residual material was saponified. The neutral fraction chromatographed on alumina gave sitosterol (7.0 g).

The ether extract gave a crude alkaloid fraction which was combined with that from the light petroleum extract (see above). The acidic and phenolic fractions were again intractable, but the neutral material after saponification yielded hexacosanol (2.0 g) by chromatography on alumina.

The acetone extract on concentration deposited crude hesperidin (21 g), which was partially purified by washing with small quantities of warm acetone and methanol. The combined, dark filtrates yielded no further crystalline products.

The methanol extract behaved similarly, yielding only hesperidin (7 g).

(b) *Extraction of the Leaves*.—These (15.3 kg) were extracted with light petroleum, ether, and methanol.

The phenolic fraction obtained by shaking the concentrated light petroleum extract with dilute NaOH was methylated by diazomethane. On chromatographing the esters on alumina, a crystalline fraction was eluted by ether. After repeated recrystallization from light petroleum, methyl triacontanoate, m.p. 69–70 °C (1.2 g), was obtained. By saponification of the neutral fraction of this extract, sitosterol (15 g) was obtained.

The ether extract also yielded methyl triacontanoate (0.8 g) and sitosterol (10 g).

The methanol extract afforded crude hesperidin (25 g) on concentrating and keeping.

(c) *Extraction of the Wood*.—The milled shavings (6.5 kg) gave sitosterol in the light petroleum (0.1 g) and ether extracts (0.2 g) and hesperidin (6 g) in the methanol extract.

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### References

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