

Short communication

Triterpenes from *Elingamita johnsonii* G.T.S. Baylis (Myrsinaceae)

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Abstract The triterpenes α -amyrin, β -amyrin, and bauerenol have been isolated from the wood and leaves of *Elingamita johnsonii*. The berries and the leaves contain nonacosane.

Keywords *Elingamita johnsonii*; Myrsinaceae; α -amyrin; β -amyrin; bauerenol; nonacosane

INTRODUCTION

Elingamita johnsonii G. T. S. Baylis (fam. Myrsinaceae) is a rare and endangered small glabrous tree that is found only on the West Island of the Three Kings Islands. It has bunches of cardinal red berries, 16 mm across, encircled by broad obovate leaves like the New Zealand karaka. The name of the plant was dedicated by Baylis "to its discoverer Major Magnus Johnson, on whose enterprise, skill and persistence the exploration of the smaller islands of the Group has greatly depended. The generic name commemorates the tragic wreck in 1902 of the inter-colonial passenger steamer *Elingamite* beneath the cliffs on which the tree grows" (Allan 1961). Using material supplied through the courtesy of Dr A. Wright, Botanist, Auckland Institute and Museum, we have been able

to investigate the chemical constituents of the berries, leaves, and wood of the tree.

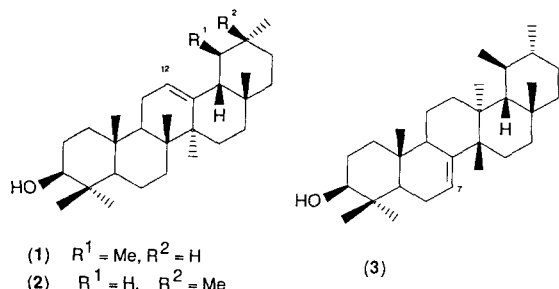
MATERIALS AND METHODS

Extractions (Soxhlet) of the dried flesh and kernel of the berries, of the leaves, and of the wood were carried out each with hexane, diethyl ether, and then methanol. The hexane extracts and combined ether and methanol extracts of the flesh and of the kernels of the berries were each chromatographed on silica gel, eluting successively with solvents or solvent mixtures of increasing polarity. The hexane and ether extracts of the wood and leaves were each chromatographed on alumina, eluting as above. Identification of constituents was carried out by physical, chemical, and spectroscopic means ($[\alpha]_D$, IR, MS, high field $^1\text{H-NMR}$, and $^{13}\text{C-NMR}$ including DEPT and COSY). Analytical and semi-preparative HPLC was carried out on a Porasil column (Waters Associates) with a refractive index detector, after pre-filtering samples with a SEP-PAK silica cartridge (Waters Associates); eluant, ethyl acetate-hexane (1:49), flow rate 4 ml/min, pressure 200 kgf/cm².

RESULTS AND DISCUSSION

Mass spectrometry (e.i) was carried out on an A.E.I. MS-30 instrument and high field NMR spectra recorded (400 MHz for ^1H and 100 MHz for ^{13}C) on a Bruker AM-400 spectrometer.

The hexane and ether extracts of the leaves and of the wood each gave a crystalline triterpenoid fraction (total 0.005%), which gave a single spot on TLC, R_F 0.78 (ether). Comparison of the ^1H - and $^{13}\text{C-NMR}$ spectra with those of authentic samples and with literature values (Chakravarty et al. 1991; Agrawal & Jain 1992) showed the crystals to be a mixture of α -amyrin (1), β -amyrin (2), and bauerenol (3). The ratio of these isomeric triterpenes from the leaves was c. 6:1.5:1 (m.p. 150–153°, $[\alpha]_D^{20} + 44^\circ$) and from the wood was c. 1.5:1:1 (m.p.



198–205°, $[\alpha]_D^{20} + 77.2^\circ$). The mass spectrum gave a molecular ion at m/z 426.386 ($\text{C}_{30}\text{H}_{50}\text{O}$ requires M 426.386) and showed characteristic fragments at m/z 218 and m/z 247 resulting from retro Diels-Alder fragmentations of Δ^{12} and Δ^7 pentacyclic triterpenes, respectively (Budzikiewicz et al. 1963).

The isomeric triterpenoids were separated by analytical HPLC and each identified by Co-HPLC, but attempts to separate the mixture on a preparative scale were unsuccessful.

The hexane extract of the flesh of the berries and the hexane (total 0.002%) and ether extracts of the leaves each gave a hydrocarbon fraction, m.p. 55–60°, with a molecular ion in the mass spectrum at m/z 408, and a characteristic fragmentation pattern with prominent peaks 14 a.m.u. apart. The compound was identified as n-nonacosane but the presence of lower homologues could not be ruled out.

The isolation of α -amyrin, β -amyrin, and bauerenol is of phytochemical interest since this combination of triterpenes occurs in a number of species of the family Myrsinaceae (e.g., Ahmad et al. 1977; Baigent & Lewis 1978).

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