Plant. Litsea japonica (Thunb.) Juss. *Source.* Shimane Prefecture, Japan. *Uses.* Not known. *Previous work.* None.

Leaves. The essential oil (483 mg, n_D^{25} 1·4773, 0·006% yield) was isolated from the fresh leaves (8·0 kg) by steam distillation. Bornyl acetate (1·1%), geranyl acetate (0·9%), γ-elemene (1·1%), and caryophyllene (34·5%) were isolated by preparative GLC (Carbowax 20 M–20% at 160°) and identified by IR and NMR. α-Pinene (2·0%), camphene (1·6%), β-pinene (0·9%), and limonene (0·3%) were confirmed by GLC (PEG-6000-3%, 50-HB-2000-3%). Unknown constituents (47·6%).

Key Word Index—Litsea japonica; Lauraceae; terpenes; caryophyllene.

Phytochemistry, 1972, Vol. 11, p. 854. Pergamon Press. Printed in England.

MELIANTHACEAE

MANGIFERIN IN *BERSAMA YANGAMBIENSIS*

M. VANHAELEN

Department of Pharmacognosy, Pharmacy Institute, Free University of Brussels, Brussels, Belgium

(*Received* 29 *July* 1971, *in revised form* 3 *September* 1971)

IN PURSUING the chemical analysis of *Bersama yangambiensis* Toussaint[1] (Yangambi, Republic Democratic of Congo), a yellow-brown pigment was detected in the crude ethanolic extract of the stem bark. The method of isolation involved removal of the fatty substances by light petroleum and exhaustive extraction by 94% ethanol. The pigment precipitated when CH_2Cl_2 was added to the methanolic solution of the crude extract. Further purification was by fully trimethylsilylation of the precipitate followed by complete de-trimethylsilylation.[2] The spectroscopic properties, physical determinations, R_fs in different solvents, colour reactions, led to its identification as mangiferin (1,3,6,7-tetrahydroxy-2-*C*-β-D-glucosylxanthone). As well direct comparison with authentic sample, the NMR spectrum of the trimethylsilyl derivative and the mass spectrum of the permethylated derivative, obtained by direct conversion of the TMS ether with Me_2SO_4, supported this identification. The occurrence of mangiferin in *Bersama yangambiensis* is the first record of this pigment in the Melianthaceae; it occurs to the extent of 6·5%. The medicinal use of extracts from *Bersama yangambiensis* by the autochtons for treatment of oedema could be related to the presence of mangiferin.[3,4]

NMR spectrum of mangiferin TMS ether: H-4, $\delta = 6{\cdot}35$ ppm; H-5, $\delta = 6{\cdot}77$ ppm; H-8, $\delta = 7{\cdot}59$ ppm; 2-*C*-β-D glucosyl, $\delta = 3{\cdot}10$–$4{\cdot}90$ ppm (7H); -Si $(CH_3)_3$, $\delta = 0{\cdot}05$–$0{\cdot}50$ ppm ($\simeq$ 70H).

Acknowledgement—We thank Dr. J. B. Harborne for authentic sample of mangiferin.

[1] J. TOUSSAINT, *Bull. Jard. Bot. Etat Brux.* **29**, 69 (1959).
[2] T. J. MABRY, K. R. MARKHAM and M. B. THOMAS, *The Systematic Identification of Flavonoids*, p. 257, Springer-Verlag, Berlin (1970).
[3] R. ANDRIANTSIFERANA, *C.R. Acad. Sci. Paris*, **264**D, 1215 (1967).
[4] C. MENTZER and A. R. RATSIMAMANGA, *Br. Pat.* 1.099.764 (CL.A61k), (17 Jan. 1968).

Key Word Index—Bersama yangambiensis; Melianthaceae; xanthones; mangiferin.