Phytochemistry, 1973, Vol. 12, p. 225. Pergamon Press. Printed in England.

LINDELOFINE AND SUPININE: PYRROLIZIDINE ALKALOIDS FROM *EUPATORIUM STOECHADOSMUM**

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(*Received* 24 *August* 1972. *Accepted* 1 *October* 1972)

Key Word Index—*Eupatorium stoechadosmum*; Compositae; pyrrolizidine alkaloids; lindelofine; supinine.

Plant. Eupatorium stoechadosmum Hance (Fujibakama in Japanese)—Compositae. *Source.* The Mizumoto park, Tokyo, Japan. Voucher Specimen is deposited in the Herbarium of this University. *Uses.* For incense and diuretic. *Previous work.* Coumarins,[1] quinones[1] and phenolic products, such as eupatorin.[2]

Present work. The MeOH extract of the dried roots (15 kg) was shaken with 2 N H_2SO_4, the acidic solution was reduced with zinc dust and filtered. The filtrate was then made alkaline with ammonia and extracted with $CHCl_3$. The $CHCl_3$ solution was evaporated to obtain a crude alkaloid (18·0 g). The chromatography on silica gel with $CHCl_3$–MeOH–28% NH_4OH (60:10:1) gave two crystalline compounds, which were recrystallized to give 1·2 g of colorless needles, m.p. 102–103° (from light petrol.), $C_{15}H_{27}O_4N$†, $[\alpha]_D^{25°}$ + 50·1° (EtOH) and 0·02 g of colorless needles, m.p. 142–144° (from acetone), $C_{15}H_{25}O_4N$,† c.d. $[\theta]_{214\,nm}^{29°}$ + 4774 (MeOH), respectively. The former was estimated as lindelofine[3] from TLC, IR, NMR and MS data and identical with lindelofine from the chemical hydrolysis that gave (+)-trachelantic acid, m.p. 88–89°, $[\alpha]_D^{25°}$ + 3·3° (EtOH) and (+)-isoretronecanol, 38–40°, $[\alpha]_D^{25°}$ + 76·4° (EtOH), picrate m.p. 188–189°. The latter was also estimated as supinine[4] from TLC, IR, and MS data and identical with an authentic sample of supinine by m.m.p. and IR spectra. The dried terrestrial parts (8·2 kg) yielded 2·0 g of crude alkaloid which contained almost lindelofine.

Acknowledgements—We thank Dr. C. C. J. Culvenor, CSIRO, Australia, for the supinine sample, Dr. T. Yamazaki, University of Tokyo for the assignment of the plant and Dr. T. Mizoguchi, Organic Chemistry Research Laboratory of Tanabe Seiyaku Co., Ltd., for the measurements of optical rotation. Thanks are also due to the members of Analytical Center of this University for NMR and Mass spectral measurements.

* Part IV in the series "Studies on Constituents of Crude Drugs". For Part III see T. FURUYA, K. MURAKAMI and M. HIKICHI, *Phytochem.* **10,** 3306 (1971).

† Molecular formulae were measured by high resolution mass spectrometer and the analytical values were in good agreement with the theoretical values.

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