

OCURRENCE OF SUPININE IN *TOURNEFORTIA SARMENTOSA* LAM.*

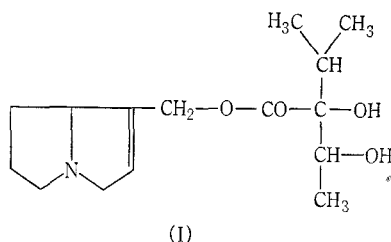
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As part of a survey of the Australian Boraginaceae, a preliminary study has been made of the alkaloids of *Tournefortia sarmentosa* Lam., a vine which occurs in north Queensland. The total alkaloid content was small and the crude base was revealed by paper chromatography as a mixture of at least six bases. The assay values given in Table 1 were determined by titration, assuming an average equivalent weight of 300.

TABLE 1
TOTAL ALKALOIDS OF *TOURNEFORTIA SARMENTOSA*

Plant Part			Free Base (% dry wt.)	N-Oxide (% dry wt.)
Leaves	0.017	0.048
Stems	0.057	0.12

The major component of the crude base from both leaf and stem had R_F 0.37 and crystallized readily from acetone. It proved to be identical with supinine (I), first isolated from *Heliotropium supinum* (Menshikov and Gurevich 1949) and occurring also as a minor alkaloid in *H. europaeum* L. (Culvenor



1954). Determination by partition chromatography showed the supinine content (base + *N*-oxide) to be 0.04 per cent. in the leaves and 0.15 per cent. in the stems. In both cases, it exists predominantly as the *N*-oxide. Identification of the other constituents was not possible with the small amount of material available.

* Manuscript received February 21, 1955.

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Experimental

(a) *Estimation of Total Alkaloid*.—Milled plant material (collected near Tully, north Queensland, in November 1951; leaves 480 g, stems 553 g) was extracted with methanol and the methanol distilled from the extract under reduced pressure. The residue was extracted with dilute HCl and of the resulting aqueous solution 10% was reserved and the remainder was reduced with zinc dust. Both reduced and unreduced portions were then made alkaline with ammonia and extracted with chloroform. The crude base fractions thus obtained were made up in methanol solution to standard volumes, and aliquots were evaporated and titrated with *p*-toluenesulphonic acid in chloroform. Results, calculated on the assumption of an average equiv. wt. 300, are given in Table 1.

(b) *Isolation of Supinine*.—On a paper chromatogram developed with butanol-acetic acid, both the reduced and unreduced base fractions showed spots of R_F 0.61 (faint), 0.57, 0.50, 0.37 (strong), 0.25, and 0.09. The base from the leaf also showed a faint spot of R_F 0.18. Supinine has R_F 0.37.

Crystallization from acetone of the reduced base from the stems gave supinine (0.42 g), m.p. and mixed m.p. 147–148 °C, $[\alpha]_D^{18}$ -13° (c, 2.01 in ethanol) (Found: C, 63.7; H, 9.0; N, 5.2%. Calc. for $C_{15}H_{23}O_4N$: C, 63.6; H, 8.9; N, 4.9%). The sample isolated from *H. europaeum* had m.p. 148–149 °C, $[\alpha]_D$ -12° (ethanol).

The residual crude reduced base was run on an assay partition column (Culvenor, Drummond, and Price 1954) to determine the total amount of supinine present. No other crystalline substance could be obtained from the titrated eluate fractions. The stems were found to contain 0.15% and the leaves 0.04% of supinine (including that present as *N*-oxide).

The authors are indebted to Mr. L. J. Webb, C.S.I.R.O., for the collection of plant material.

References

- CULVENOR, C. C. J. (1954).—*Aust. J. Chem.* **7**: 287.
CULVENOR, C. C. J., DRUMMOND, L. J., and PRICE, J. R. (1954).—*Aust. J. Chem.* **7**: 277.
MENSHIKOV, G. P., and GUREVICH, E. L. (1949).—*J. Gen. Chem. Moscow* **19**: 1382.