

ALKALOIDS OF THE AUSTRALIAN RUTACEAE: *GLYCOSMIS*
PENTAPHYLLA (RETZ.) CORREA*

By A. W. MCKENZIE† and J. R. PRICE‡

Glycosmis pentaphylla (Retz.) Correa, a small tree or shrub assigned by Engler and Prantl (1931) to the tribe Aurantieae of the family Rutaceae and distributed from north-eastern Australia to Malaya and India, has been examined in the course of a survey of the occurrence of alkaloids in members of this family indigenous to Australia. The air-dried plant was found to contain approximately 0.01 per cent. of each of the two furoquinoline bases kokusaginine, 4,6,7-trimethoxyfuro-(2',3'-2,3)-quinoline (see Anet *et al.* 1952), and skimmianine, 4,7,8-trimethoxyfuro-(2',3'-2,3)-quinoline.

Experimental

Leaves and twigs (7.36 kg.), collected May 1951 at Chilli Creek, Cape York Peninsula, were milled and percolated with methanol (80 l.) at room temperature, the solvent evaporated, and the residue extracted 3 times with hot aqueous hydrochloric acid (5% ; 10 l. in all). The alkaloids were recovered from the acid solution, dissolved in methanol (250 ml.), and treated with excess methanolic picric acid, giving picrate A, 1.61 g. The base not precipitated was recovered from the methanolic picric acid mother liquors and, after another passage through 5% hydrochloric acid, dissolved in methanol (75 ml.) and again treated with excess methanolic picric acid, precipitating picrate B, 1.20 g. No more picrate was obtained by re-treating the mother liquors.

Picrate A, twice crystallized from ethanol, gave kokusaginine picrate, fine yellow needles, m.p. 217.5–218.5 °C.‡ alone or mixed with an authentic specimen.

Found: C, 49.2; H, 3.3; N, 11.3%.

Calculated for $C_{14}H_{13}O_4N.C_6H_3O_7N_3$: C, 49.2; H, 3.3; N, 11.5%.

Kokusaginine recovered from the picrate was converted to the characteristically sparingly soluble hydrochloride, m.p. 224 °C. (decomp.), and thence again to the base which separated from benzene as colourless prisms, m.p. 171–172 °C. undepressed by admixture with authentic kokusaginine.

Found: C, 65.0; H, 5.0; N, 5.5%.

Calculated for $C_{14}H_{13}O_4N$: C, 64.9; H, 5.0; N, 5.4%.

The R_F values for butanol-5% aqueous acetic acid were as follows:

Authentic kokusaginine	0.80
Kokusaginine from <i>G. pentaphylla</i>	0.80.

Additional confirmation was furnished by heating with methyl iodide in a sealed tube at 100 °C. for 1 hour giving isokokusaginine, m.p. and mixed m.p. with an authentic specimen 250–251 °C.

Picrate B crystallized from methanol as yellow needles, m.p. 197–198 °C. undepressed by admixture with skimmianine picrate.

Found: C, 49.2; H, 3.4; N, 11.7%.

Calculated for $C_{14}H_{13}O_4N.C_6H_3O_7N_3$: C, 49.2; H, 3.3; N, 11.5%.

* Manuscript received March 21, 1952.

† Division of Industrial Chemistry, C.S.I.R.O., Melbourne.

‡ Melting points are corrected; microanalyses are by the C.S.I.R.O. Microanalytical Laboratory.

The base recovered from the picrate crystallized from aqueous ethanol as colourless prisms, m.p. 177–178 °C. alone or mixed with an authentic specimen of skimmianine.

Found: C, 65.1; H, 5.0; N, 5.7%.

Calculated for $C_{14}H_{13}O_4N$: C, 64.9; H, 5.0; N, 5.4%.

The R_F values for butanol-5% aqueous acetic acid were as follows:

Authentic skimmianine	0.88
-----------------------	----	----	----	------

Skimmianine from <i>G. pentaphylla</i>	0.87.
--	----	----	----	-------

The authors are indebted to Professor E. J. Hartung for providing accommodation and facilities in the Chemistry Department, University of Melbourne, to Mr. G. K. Hughes for specimens of kokusaginine and some derivatives, and to Mr. L. J. Webb, Division of Plant Industry, C.S.I.R.O., for supplying the material used in this investigation.

References

- ANET, F. A. L., GILHAM, P. T., GOW, P., HUGHES, G. K., and RITCHIE, E. (1952).—*Aust. J. Sci. Res. A* 5: 412.
- ENGLER, A., and PRANTL, K. (1931).—“Die Naturlichen Pflanzenfamilien.” Vol. 19a. (Wilhelm Engelmann: Leipzig.)