A New *Strychnos* Alkaloid

As part of a survey of the chemical constituents of the Australian flora, we have examined the alkaloids of *Strychnos psilosperma* F. Muell. Leaves collected at Dalmar, near Rockhampton, contained approximately 1 per cent total alkaloid from which a new alkaloid, now named 'strychnospermine', was readily isolated. It formed colourless needles of melting point 209°, had $[\alpha]_D + 58°$ ($c = 2 \cdot 07$ per cent in chloroform), and analyses of it, its bromo-derivative (m.p. 245°), its hydrochloride (m.p. 330–332° with decomp.) and its picrate (m.p. 254° with decomp.) indicated the formula $C_{21}H_{28}O_3N_2$. Tests for a methylene-dioxy group were negative, but one methoxyl and one methylimino group were present. When a small crystal of potassium dichromate was added to its solution in cold concentrated sulphuric acid, an intense permanganate colour was immediately produced. Treatment of the alkaloid with methyl iodide at room temperature readily gave a methiodide (m.p. 335° with decomp.), showing the presence of a tertiary nitrogen atom. Strychnospermine could not be hydrogenated in acetic acid solution in the presence of palladium charcoal. Hydrolysis with acid or alkali yielded deacetylstrychnospermine (m.p. 222°), which was smoothly reconverted to the parent alkaloid by acetic anhydride. The deacetyl derivative gave with nitrous acid a pale yellow crystalline nitroso compound (m.p. *c.* 195° with decomp.). The remaining oxygen atom is inert and is presumably in an ether linkage.

The evidence so far obtained, although slight, supports the hypothesis that strychnospermine is structurally related to the alkaloids of the strychnine group. Recently, Woodward[1] (cf. Goutarel[2] *et al.*) has advanced a theory of the biogenesis of these alkaloids, the application of which to strychnospermine leads to the deduction of the structural formulæ shown below.

The following points should be noted: (*a*) the rupture of the carbocyclic ring and the subsequent formation of the six-membered ether ring involve the loss of a carbon atom, whereas in strychnine a seven-membered ring is formed without the loss of a carbon atom; (*b*) at present formulæ *A* and *B* appear equally probable; (*c*) the reaction between the primary amino-group and formaldehyde (or its equivalent) leads to simple methylation and not to the formation of a new ring as in strychnine; (*d*) acetylation of the cyclic nitrogen atom is also simple, and again there is no subsequent formation of a new ring as in strychnine.

Work on the structure of strychnospermine is in progress, and it will be of interest to determine whether these predictions have any validity.

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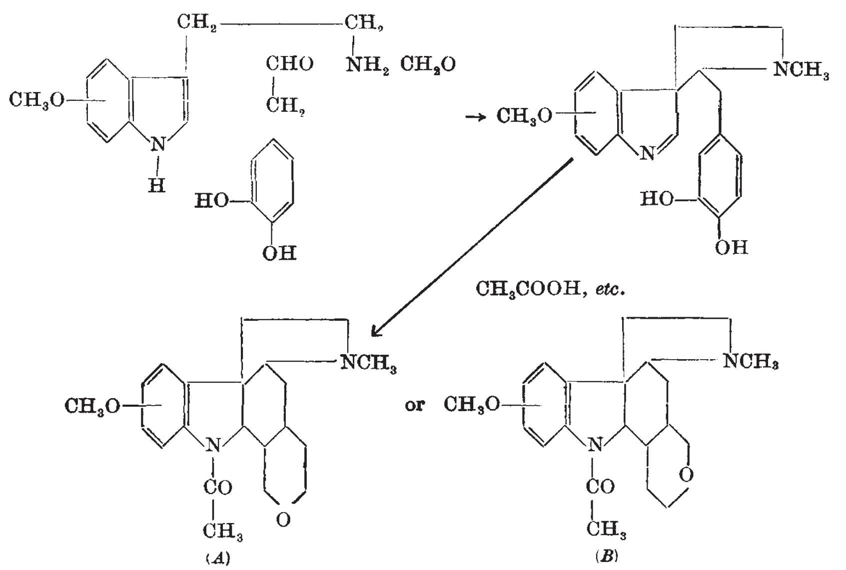

(*A*) (*B*)

[1] Woodward, R. B., *Nature*, **162**, 155 (1948).
[2] Goutarel, R., Janot, M.-M., Prelog, V., and Taylor, W. I., *Helv. Chim. Acta*, **33**, 150 (1950).

Filter-Paper Chromatography: Extraction of Sugars from the Paper at Room Temperature

In the procedure for the quantitative analysis of sugars, described by Flood, Hirst and Jones[1], the paper strips containing the sugars are cut out and extracted by allowing condensed water to run down the paper. It has been found, however, that destruction of certain sugars occurs on boiling a solution under these conditions. To obviate this difficulty, we have devised a technique of extraction at room temperature similar to that used by Dent[2] for amino-acids.

A chromatogram run with water as solvent indicated that the sugars travelled down the paper almost at the solvent front, and that the first few drops of eluate contained all the sugar from the paper strip. Similar results were obtained when water from a capillary was allowed to flow slowly down the paper (see below). On the other hand, however, it was found that if the rate of flow from the capillary were appreciably increased at the initial stage, there was risk of incomplete extraction due to channelling of the water flow.

The procedure finally adopted was as follows. The paper strip, pointed at the lower end to facilitate dropping, was held between two glass rods the interior surfaces of which were ground flat, and water was introduced to the top of the paper by means of a capillary dropping tube. This tube (capacity 10 c.c.; dropping-rate when full, 1 drop per 10 sec.) rested between the two supporting rods, touching the top of the paper. Water (1 c.c.) was added and allowed to flow down until the paper was completely wet; all the sugar is then at the foot of the strip. The dropper was then filled to the top and the flow continued for half an hour (total volume collected, *c.* 5 c.c.). This eluate contained all the sugar