Letters to the Editor

Vincamajine, the major alkaloid of leaves of *Rauwolfia mannii* Stapf

SIR,—The alkaloidal composition of a number of species of *Rauwolfia* has been studied in recent years (Saxton, 1960). The species of which we know least is *R. mannii* Stapf, an undershrub or small tree 2 to 30 ft high of the thick forests on the borders of Eastern Nigeria and Western Cameroon, also found in New Guinea, Gabon and the Congo. It was previously known as *R. preussii* K. Schum. (Thistelton-Dyer, 1904), also as *R. rosea* K. Schum. (Boutique & Monseur, 1955) in Tanganyika, Kenya and Mozambique (Bisset, 1958). Monseur (1957) found 0·002% of reserpine in the roots of *R. mannii* and Kaiser & Popelak (1959) reported the absence of quaternary bases from the roots. Korzun (1957) examined the weak bases from the roots of the East African material (syn. *R. rosea*) and showed the probable presence of reserpine, rescinnamine, deserpidine, δ-yohimbine and reserpiline. There is no published work on the alkaloids of the leaves of the species.

During a visit to the Oban Forest Reserve in Eastern Nigeria, one of the authors (M.B.P.) collected a small quantity of leaves from plants 2 to 5 ft high, bearing flowers and fruits and taxonomically identified as *R. mannii*.

The powdered, dried leaves (200 g) were extracted by percolation to exhaustion with 5 litres of ethanol containing 1% acetic acid. Solvent was removed from the extract by evaporation at low temperature under reduced pressure, the residue was taken up in 300 ml of 5% tartaric acid solution and filtered. The filtrate was washed several times with light petroleum (b.p. 60–80°), made alkaline with ammonium hydroxide (0·88) and extracted with ether (6 × 150 ml). The combined ether extracts were evaporated to yield 0·95 g of crude base.

Ether-soluble bases (950 mg), dissolved in chloroform (6 ml), were chromatographed on 50 g of kieselgel. Elution was carried out successively as follows, residues from each fraction being examined by thin layer chromatography (kieselgel G Merck Alkaline, solvent: dichloromethane containing 2% methanol, reagent: ceric sulphate):

(*a*) Chloroform: acetone (94:6; 750 ml) yielded 43 mg, containing at least three alkaloids with Rf values higher than that of vincamajine.

(*b*) Chloroform: acetone (94:6; 750 ml) yielded 380 mg, mainly vincamajine (see (*c*) below).

(*c*) Chloroform: methanol (95:5; 500 ml) yielded 185 mg, mainly vincamajine. This residue, combined with that from (*b*) above (565 mg) crystallised readily from methanol to give vincamajine (200 mg; 1 g/kg of dried leaves), m.p. 221°, giving no depression on admixture with an authentic specimen. $[\alpha]_{58}^{23}$ −16° (chloroform containing 0·5% ethanol; c, 1; vincamajine gives −18° under same conditions). Infrared, ultraviolet and mass spectra of the alkaloid and authentic vincamajine were each identical. Found: C, 71·9; H, 7·5; N, 7·7. $C_{22}H_{26}O_3N_2$ requires C, 72·1; H, 7·15; N, 7·65.

(*d*) Chloroform: methanol (95:5; 1,000 ml) yielded 210 mg, containing two alkaloids with Rf values lower than that of vincamajine.

Vincamajine is thus the principal alkaloid of the leaves of *R. mannii*. It has been previously isolated from *Vinca major* L. (Janot & Le Men, 1955), *Vinca difformis* Pourr. (Gabbai, 1958) and *Alstonia longifolia* (A. DC.) Pichon (= *Tonduzia longifolia* (A. DC.) Markg.) (Goodwin & Horning, 1956), all of

the family Apocynaceae. Its structure is that of a carbomethoxy-16-tetraphyllicine (Gosset, Le Men & Janot, 1961; Janot, Le Men, Gosset & Levy, 1962; Janot, Le Men & Garnier-Gosset, 1965). It is known that tetraphyllicine and its derivatives occur in many species of *Rauwolfia* (Saxton, 1960), but this is the first time, so far as we are aware, that vincamajine has been found in the genus *Rauwolfia*.

Because of the small amount of leaf sample available, we have been unable to study the five other bases which are present in concentrations much smaller than vincamajine but none of them was found to correspond to authentic reserpine.

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