

## ALKALOIDS FROM *VOACANGA SCHWEINFURTHII* VAR. *PUBERULA*

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This communication reports on the alkaloids of *Voacanga-schweinfurthii* Stapf var. *puberula* Pichon (1), previously known as *Voacanga puberula* K. Schum. Plant material was collected in Zaire and extractions were conducted in the usual fashion (2). The seeds contain a single alkaloid, (-)tabersonine (35g/kg); alkaloids of the stem bark (20g/kg) mainly consist of vobasine and derivatives thereof. The root bark alkaloid mixture (37g/kg) contains bisindole alkaloids, voacamine and voacamidine, along with traces of other bases (see table).

The alkaloid content of *V. schweinfurthii* Stapf var. *puberula* is different from the one of *V. schweinfurthii* Stapf (3); it consists of the three types of alkaloids usually found in the genus *Voacanga*: iboga,  $\alpha$ -acylindole and dimers made of vobasinol and of an iboga moiety (4). The presence of large quantities of (-)tabersonine in the seeds is worth being noted.

Compound	Identified by	Found in	Yield (g/kg)	Reference
Tabersonine	tlc,uv,ir,ms,nmr,[ $\alpha$ ]D	seeds	34.9	5
		root bark	0.2	
Vobasine	tlc,uv,ir,ms,nmr,[ $\alpha$ ]D	stem bark	7	5
Perivine	tlc,uv,ir,ms,nmr,mp,[ $\alpha$ ]D	"	0.1	5
Vobasinol	tlc,uv,ir,ms,nmr,[ $\alpha$ ]D	"	0.1	6
Coronaridine	tlc,uv,ir,ms	root bark	0.2	5
Voacangine	tlc,uv,ir,ms	"	4	5
Ibogaine	tlc,uv,ir,ms	"	0.2	5
Voacamine	tlc,uv,ir,ms,nmr	"	14	5
Voacamidine	tlc,uv,ir,ms,nmr	"	8	5
3-6 oxido voacangine	tlc,uv,ir,ms,nmr	"	0.8	7

\*Small quantities of 5 other new alkaloids of undetermined structure were also isolated from the stem bark.

### EXPERIMENTAL

GENERAL—see ref. 7.

**EXTRACTION AND SEPARATION OF THE ALKALOIDS.**—Ground seeds (50g) alkalinized with  $\text{NH}_4\text{OH}$  were lixiviated with 2 liters of petroleum ether. Evaporation gave a gum which was extracted with dilute aqueous  $\text{H}_2\text{SO}_4$ ; the water was alkalinized with  $\text{NH}_4\text{OH}$  and extracted with chloroform; evaporation yielded 1.1 g of a gum. The dried seeds were again treated with  $\text{NH}_4\text{OH}$  and lixiviated overnight with ethyl acetate; the same treatment as above gave 0.5 g of a gum. The combined extracts showed one spot on tlc, identified as tabersonine.

The stem-bark (250 g) was finely ground and extracted as previously described by means of ethyl acetate. The crude alkaloid mixture (5.02 g) obtained was purified by column chromatography on 100 g silicagel; 160 ml fractions were collected. The solvent was chloroform (f 1-25), then chloroform-methanol (99-1; f 26-44). Vobasine was in fractions 11-25; perivine was in fractions 36-37; vobasinol was in fractions 43-44.

Ground root-bark (300 g), alkalinized with  $\text{NH}_4\text{OH}$ , when lixiviated with ethyl-acetate yielded 13.2 g of crude alkaloid mixture. A 2 g sample of the bisindole bases was separated by means of a LH-20 Sephadex column (85 g; height of the column=1 m). The solvent was a 7:3 mixture of methanol and chloroform; 10 ml fractions were collected. Voacamine and voacamidine were eluted first in fractions 32-45 (1.5 g); monomers were in fractions 46-70. They were more conveniently separated by chromatography on silicagel. Coronaridine and voacangine were eluted by chloroform; they were followed by 3-6 oxido voacangine [chloroform-methanol (99-1)], voacamine and voacamidine [chloroform-methanol (49-1)], vobasine [chloroform-methanol (19-1)] and ibogaine [chloroform-methanol (10-1)].

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