

SOURCES AND CONSTITUENTS OF TWO WESTERN MALAYSIAN DART POISONS

N.G. Bisset, K.H.C. Baser, Department of Pharmacy, Chelsea College, University of London
Manresa Road, London, SW3 6LX

J.D. Phillipson, Department of Pharmacognosy, The School of Pharmacy, University of
London, 29/39 Brunswick Square, London, WC1N 4AX

Dimeric bis-quaternary alkaloids having strong muscle-relaxant (curarizing) activity are well known as active principles in arrow and dart poisons made from South American species of *Strychnos* such as *S. toxifera* Rob. Schomb. ex Lindl. Similar compounds have recently been isolated from the African *S. usambarensis* Gilg, likewise a source of arrow poison. South-East Asian *Strychnos* species are also arrow- and dart-poison ingredients, but primarily because of their content of the powerfully convulsant strychnine (Bisset & Phillipson, 1976).

In 1891, when Wray was with Semai Senoi aborigines in north-west Malaysia he collected specimens of their dart poisons and the plants from which they supposedly were derived. Later on, pharmacological studies indicated that some of these materials might have curarizing activity (Bisset & Woods, 1966).

Some of Wray's specimens are still held in the Museum of Economic Botany, Kew, and in the Museum of the Pharmaceutical Society, Bradford. *Ipoh akar* and *lampong*, poisons said to be based only on *Strychnos*, and the associated plant materials, now recognised as belonging to *S. vanprukii* Craib, have been re-examined.

The only alkaloids which could be identified in the *ipoh akar* plant material were indolo-pyridino-quinolizidinones (Bisset & Phillipson, 1976), but these were not detected in either of the poisons. On analysis, the two poisons gave the following data:

	<u>Ipoh akar</u> poison	<u>Lampong</u> poison
Tertiary alkaloids	12%	< 1%
Quaternary alkaloids	17%	9%
Cardiotonic glycosides	11%	21%

Each had strychnine as the major tertiary base and each contained macusine B and bis-quaternary dimeric and unidentified alkaloids in the quaternary base fraction. Extracts from Malaysian samples of *S. ignatii* Berg. were chromatographically similar to the corresponding extracts from the two dart poisons and therefore it is this species, rather than *S. vanprukii*, which is considered to be the true source of the alkaloids in the poisons. β -Antiarin was identified in the cardiotonic glycoside fraction of *ipoh akar* poison and α - and β -antiarins in that of *lampong* poison, so that, in contradiction with the information given by Wray, *Antiaris toxicaria* Lesch. must have been used in the preparation of the products (Bisset, 1962). The two poisons, like many others made by the Semai Senoi aborigines (Bisset & Woods, 1966), were mixed *Strychnos*/*Antiaris* poisons.

Bisset, N.G. & Phillipson, J.D. (1976). *Lloydia*, 39, 263-325 and references cited therein.

Bisset, N.G. & Woods, M.C. (1966). *Lloydia*, 29, 172-195 and references cited therein.

Bisset, N.G. (1962). *Planta Med.*, 10, 143-151.