In vitro screening of Strychnos species for antiplasmodial activity

Geneviève Philippe, Luc Angenot, Patrick De Mol, Eric Goffin, Monique Tits and Michel Frédéric.

a University of Liège, Natural and Synthetic Drug Research Center, Laboratory of Pharmacognosy, B 36, Av. de l'Hôpital 1, 4000 Liège, Belgique.
b University of Liège, Laboratory of Medical Microbiology, Av. de l'Hôpital 1, 4000 Liège, Belgique.
e-mail: g.philippe@ulg.ac.be

Among the four species of malarial parasites which infect humans, Plasmodium falciparum is responsible for the most severe cases. Nowadays, the increasing resistance of this parasite against the most widely used antimalarial drugs makes it urgent to find alternative compounds (1).

In consideration of the many biological properties of alkaloids, and particularly of quinine (which remains an important antimalarial drug), it was not surprising that a series of indolomonoterpenic alkaloids, mainly isolated from Strychnos usambarensis Gilg and from Strychnos icaja Baill., the latter used in traditional medicine from Central Africa to treat chronic malaria, present antiplasmodial properties (2). Therefore, these plants, both of which contain a complex mixture of these indolomonoterpenic alkaloids, were subjected as well as other species of Strychnos to a first screening and were the most active against P. falciparum (3).

Recently, a new screening was carried out on thirteen Strychnos species; methanolic and EtOAc extracts were tested in vitro against a chloroquine-susceptible line of P. falciparum which was cultivated according to the procedure of Trager and Jensen (4). The assays were performed as described by Desjardin et al. (5) and modified by Mirovsky et al. (6). No species seemed as active as S. icaja (IC<sub>50</sub> about 0.3 µg/ml for EtOAc extract of roots) and S. usambarensis (IC<sub>50</sub> about 0.5 µg/ml for EtOAc extract of roots). However, four other species could be interesting for further investigations: S. gossweileri Exell, S. henningsii Gilg, S. mellodora S. Moore and especially S. variabilis De Wild. (IC<sub>50</sub> about 2.5 µg/ml for EtOAc extract of roots).

References:

(4) Trager W. and Jensen J.B., Science, 1976, 190, 792-794
(6) Mirovsky P., Gay F., Bustos D., Mazier D., and Gentilini M., Transactions of the Royal Society of Tropical Medicine and Hygiene, 1990, 84, 511-515