

**GUAIFLAVINE, A NEW BISINDOLE QUATERNARY ALKALOID FROM THE  
STEM BARK OF *STRYCHNOS GUIANENSIS***

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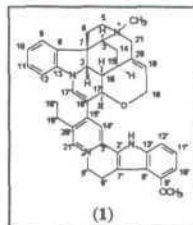
*Strychnos guianensis* (Aubl.) Mart. (Loganiaceae) is a moderate-sized liana that occurs widely throughout the middle and upper Rio Orinoco basins and the entire Amazon basin. It is one of the frequently collected species of this genus in South America, and was the first botanically identified source of curare, of which it is a frequent ingredient. In the 1950's, chemical investigation of the plant led to the isolation of small amounts of many colored alkaloidal products of unknown structure.<sup>1</sup> We have reported the structures of *guianensins*<sup>2</sup> and 9-methoxyguissochizol from the tertiary alkaloidal fractions of the stem bark of *S. guianensis*.

In a continuation of our search for bioactive compounds from the genus *Strychnos*, we have studied the quaternary bases of *S. guianensis*, which resulted in the isolation of several yellow, orange, and red alkaloids. Among these components is a yellow alkaloid that we named guaiflavine (1). In this work, we report the purification and structure determination of this new natural product (1). Moreover, some biological experiments are also described.

Guaiflavine (1) is an asymmetrical bisindole quaternary alkaloid that gave a blue color with ceric sulfate-sulfuric acid reagent. The molecular weight, 610.3296, established by high resolution ESIMS corresponds to the elemental composition  $C_{40}H_{42}N_4O_2$ , and the structure of 1 was deduced from interpretation of its 2D NMR spectra (400/100 and 600/150 MHz) and by data comparison with model compounds.<sup>2,3,4,5</sup>

Biological investigation of (1) has been initiated. In mice, guaiflavine administered intraperitoneally possesses an LD<sub>100</sub> of about 3 mg/kg, and death occurs after 5-10 minutes. Further studies to investigate the basis for this toxicity would be necessary. Nevertheless, the ethnobotanical use of *S.*

*guianensis* in the preparation of arrow poisons could at least be partially explained by the presence of 1.



- (1) Marini-Bettolo, G.B. et al. *Gazz. Chem. Acta* 1956, 86, 1305-1323.
- (2) Quetin-Leclercq, J. et al. *Phytochemistry* 1995, 40, 1557-1559.
- (3) Caprasse, M. et al. *Planta Med.* 1984, 50, 131-133.
- (4) Gadi Biala, R. et al. *J. Nat. Prod.* 1998, 61, 139-141.
- (5) Massiot, G. et al. *J. Org. Chem.* 1983, 48, 1869-1872.