

# Short Communication

## VIOLA: A PROMISING GENUS FOR ETHNOPHARMACOLOGICAL INVESTIGATION

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*A physiological effect is more likely to be found if a particular species or genus of plants is used for the same purpose by tribes without cultural contact.*

— Kvist & Holm-Nielsen (1987)

The genus *Viola* of the Myristicaceae has some 40 species of small-, medium- or large-sized trees native to the humid, mixed hardwood forests of tropical America. It has long been exploited as a useful group of trees. The wood of several species is brownish when freshly cut but rapidly becomes somewhat reddish or purplish; the sapwood is much lighter. The wood of all species is similar, but several are now being exploited in the preparation of thin sheets that are easily made into veneer and plywood. The seeds of all species are rich in oil or fat variously known as *Viola* Fat, Ucuúba or Ucuúba Butter; resembling Cacao Butter, it is employed locally in the manufacture of soap and candles. In Venezuela, the fat of one species is valued in the treatment of rheumatism. *Viola sebifera*, one of the best-known and a widely distributed species, is employed medicinally by Venezuelan shamans; the inner bark is dried and smoked "... at dances when curing fevers" (Altschul 1973). Known by the Indian name *wircawei-yek*, it is said to be "very strong." In the same region where it has the variant name *erika-bai-yek*, the natives boil the bark and use it to drive away evil spirits (Altschul 1973; Uphof 1968; Record & Hess 1943).

An undetermined species of *Viola* has been reported to be used as a contraceptive by Indians on the Rio Negro of Brazil and is reputedly effective for a period of two or three years. However, no method of its preparation and administration is available, no information is given as to which part of the plant is used, and no voucher specimen was indicated (Biocca 1970, 1966). A species of *Viola* from southeastern Brazil has many folk uses: the seeds

of *V. bicubyba* yield a fat employed to treat rheumatism, asthma, tumors of the joints, intestinal worms, skin diseases, erysipelas, hemorrhoids, and bad breath; the resinlike bark exudate is used as a styptic to treat bleeding breasts, colic, ulcerating sores and wounds, and for staunching many kinds of bleeding. It is also reported to be a "brain stimulant," reviving the memory and the intelligence; it has likewise been said to possess narcotic properties (Kistler 1970; Texeira da Fonseca 1922). The Wayapi Indians of French Guiana have a curious use of a species of *Viola*: they employ the bark to transport and conserve fire (Grenand 1980).

The bark exudate of several species of *Viola* has been investigated in the laboratory (see de Smet 1985 for an excellent overview), but almost all of this research has focused on the psychopharmacological aspects of the genus.

## ETHNOBOTANICAL METHODS OF VIOLA RESEARCH

In 1976, Schultes and Swain enumerated five different avenues of ethnobotanical inquiry: random screening, literature search, exploration, herbarium studies, and examination of archaeological material. While any one of these avenues can and has led to significant findings, it is obvious that a combination of several might prove to be more productive. In the present authors' studies of *Viola* (see Figure 1), this combination has indeed uncovered hitherto unknown uses, which have already been of extreme academic interest and may eventually result in very practical applications in modern pharmacology and medicine.

## HISTORICAL NOTES ON ETHNOBOTANICAL ASPECTS

In the 1950s, the source of a potentially hallucinogenic snuff of the Indians in the Amazon was identified as a resinlike liquid of the inner bark of several species of *Viola*: *V. calophylla* and *V. calophylloidea* (Schultes 1954). An earlier and incidental report (Ducke 1938) had suggested that the leaves of a *Viola* were used in preparing the snuff, but all later studies (Schultes, Swain & Plowman 1978; Schultes & Swain 1976; Schultes & Holmstedt 1971, 1968; Schultes 1969, 1954) have shown that it is only the bark "resin" that is utilized. The discovery of psychoactivity in this genus was exciting and led to a reassessment of the use of bioactive snuffs in the Amazon. Prior to this discovery, it had been assumed that the source of all hal-

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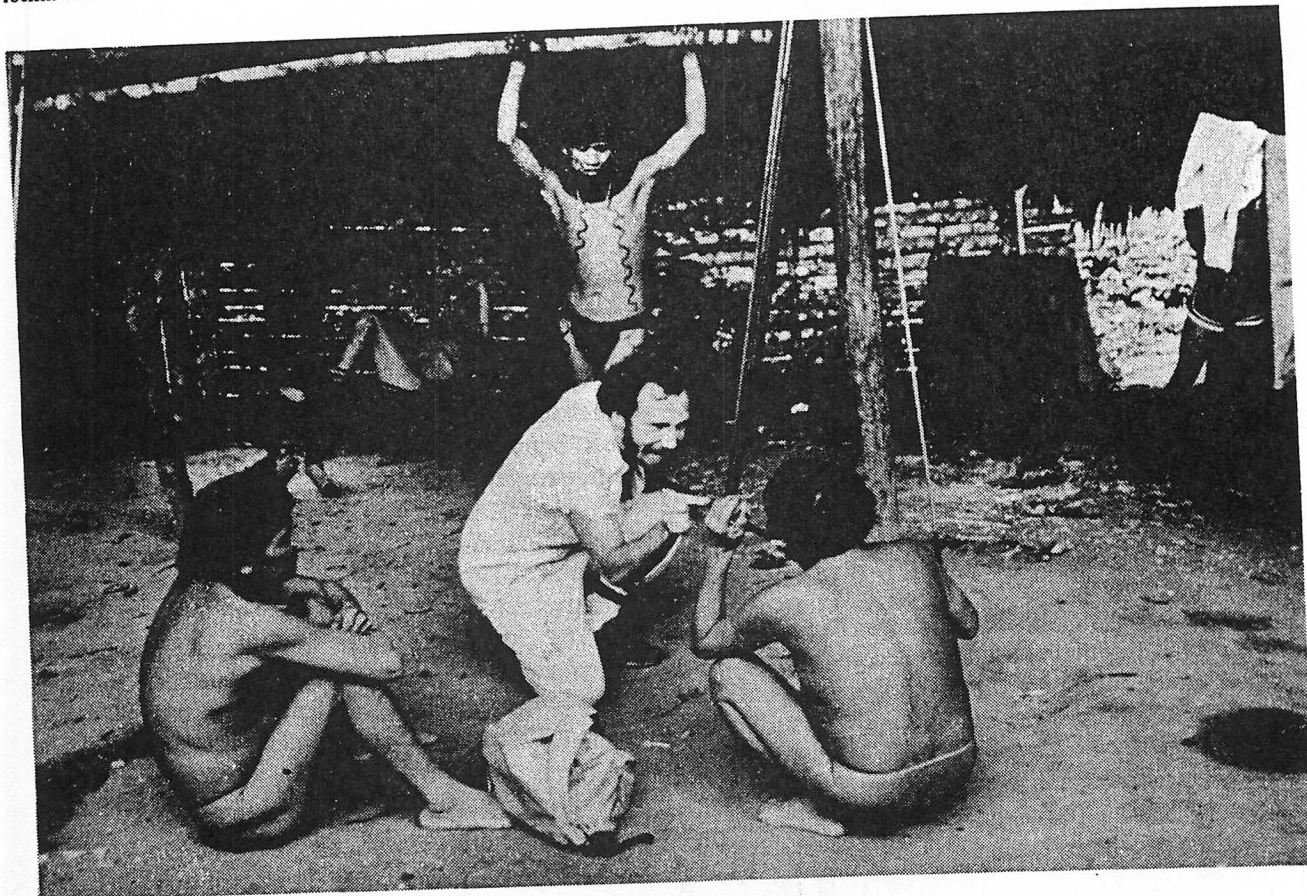


Figure 1. One of the authors (Plotkin) discussing *Virola* snuffs with Waika (Yanomamo) Indians at the Brazil-Venezuela border. (Photo by G. Medina)

lucinogenic snuffs of the Amazon was the bean of the leguminous *Anadenanthera peregrina*, even in areas where this plant did not occur (Cooper 1949).

This discovery naturally led to more intensive ethnopharmacological studies in the field, and it was soon learned that other species of *Virola* and even other genera of the Myristicaceae were similarly employed in the elaboration of hallucinogenic preparations: snuff (see Figure 2) and, among several tribes, of hallucinogenic pellets that medicine men of the Witotos and Boras ingested (Schultes, Swain & Plowman 1978; Schultes & Swain 1976; Soares Maia & Rodrigues 1974; Prance 1972, 1970; Schultes 1969; Schultes & Holmstedt 1968; Biocca 1966).

#### RECENT ETHNOBOTANICAL RESEARCH

Recent research has uncovered very significant ethnobotanical information pointing to the hitherto unrecognized wide employment of *Virola* in treating skin problems and for other medicinal uses. As early as 1775, the French botanist Aublet wrote that natives in French Guiana employed the resinous liquid in *Virola* bark to treat

*aphte*, the French medical term for thrush, a fungal infection of the tongue and roof of the mouth. It is also used for the same purpose in Guyana (Fanshawe 1950).

Research in the herbarium of the Instituto Botánico in Caracas, Venezuela, has revealed a specimen of *Virola elongata* (M.M. Suarez 5) with the following annotation: "Uso: ulceraciones bucales." The locality of this collection is Caño Sacupana, Delta del Orinoco, Venezuela. Presumably, the information refers to its use among the Warao Indians. The Tirios of the village of Tepoe in southwestern Suriname apply the red resinlike exudate to mouth sores and to fungal infections of the skin (M.J. Plotkin 587); and the Wayanas, living in the same village, apply it to sores under the foreskin of the penis (M.J. Plotkin 587).

*Virola melinonii* (Ben.) A.C. Smith, *Brittonia* 2 (1938), 502. (*V. michelli* Heckel). The Tirios of southwestern Suriname apply the reddish exudate of *V. melinonii* (Figure 3) to fungal infections of the skin (M.J. Plotkin 146); the Waiwais in the same locality employ a wash of the bark and leaves for the treatment of fevers and bleeding cuts. The Akuriyos of the village of Tepoe in southwestern

FIGURE 2

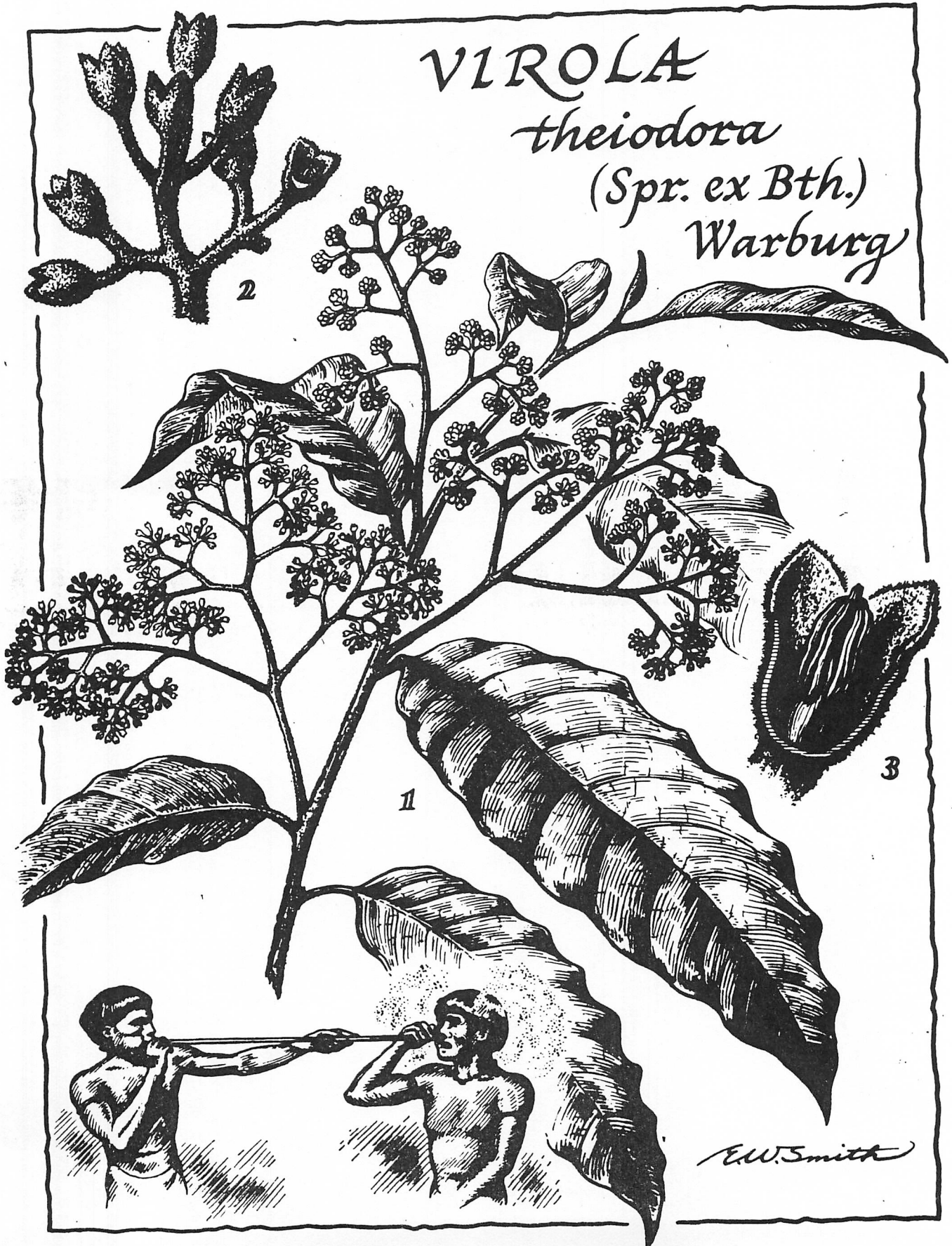
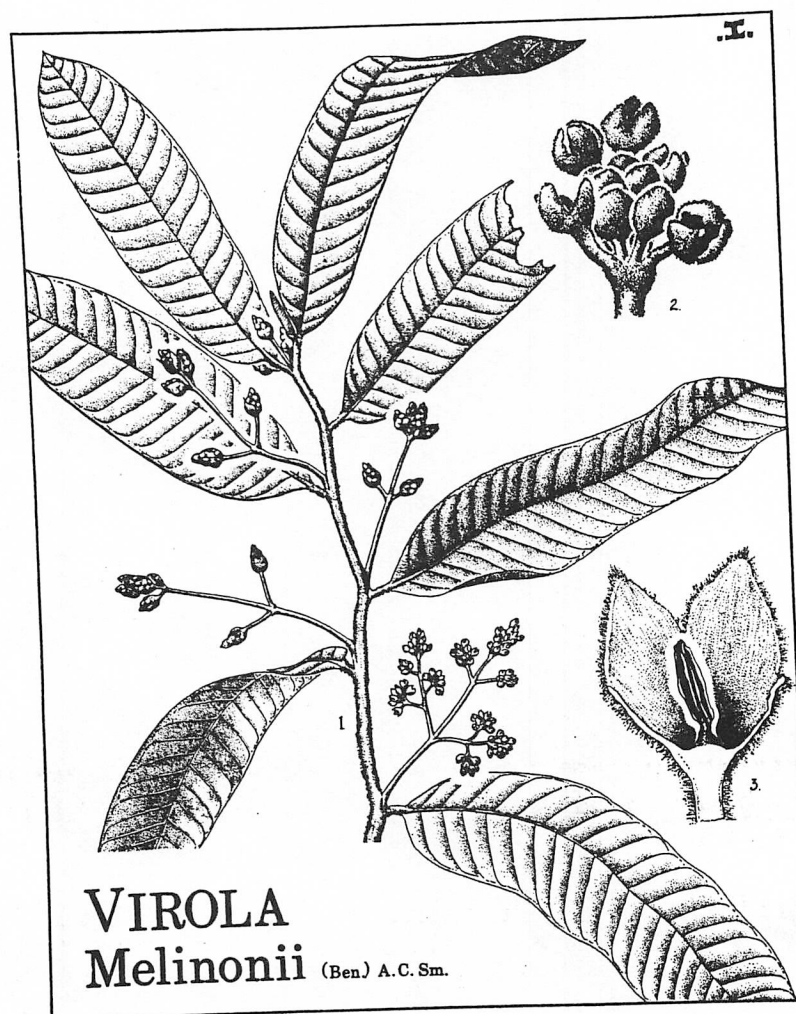


FIGURE 3



Suriname drip the resinous liquid into the eyes to relieve pain (M.J. Plotkin 638). The wood is suitable for making plywood, veneer, cases, crates, cigar boxes, coffins, and matches (Vink 1977).

*Virola sebifera* Aublet, *Histoire des Plantes Guiane Françoise*, 2 (1775) 904, t. 345. The Tirios of southwestern Suriname gargle with a decoction of the bark in treating sores of the mouth. In French Guiana, the bark exudate is applied to thrush, and toothache pain is alleviated by covering the tooth with a piece of cotton soaked with this liquid (Aublet 1775).

*Virola surinamensis* (Roland.) Warburg, *Nova Acta Leop.-Carol.* 68 (1897) 208, t. 1, 4. The Tirios of southwestern Suriname employ the red resinlike bark exudate to treat skin rashes, anal itch, and jock itch — all apparently of fungal origin; they likewise use it to treat toothache (M.J. Plotkin 335). The Wayapí of French Guiana prepare a decoction of the small aerial roots to treat coughs (Grenand 1980).

*Virola* spp. In Guyana, the exudate of several species of *Virola* is employed in counteracting thrush. It is also applied in treating cataracts (Fanshawe 1950).

#### SUMMARY

Data are now available on the antifungal use of *Virola* from four countries and some 14 different tribes of Indians in these countries who employ the *Virola* exudate for the same or similar purposes. Three of the five methods of ethnobotanical investigation proposed by Schultes and Swain in 1976 have been employed in this ethnobotanical research. Furthermore, both of the present authors have successfully employed this antifungal treatment themselves. Given that deep fungal infections of the skin are often considered incurable with medications currently in use, further laboratory analysis of *Virola* resin should be undertaken as soon as possible.

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