

De Plantis Toxicariis e Mundo Novo Tropicale Commentationes XIII. Further Notes on *Viola* as an Orally Administered Hallucinogen

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Ingestion of the resin of *Viola* bark for hallucinogenic purposes was first reported in 1969 (Schultes 1969). The species employed was *Viola theiodora* (Spr. ex Benth.) Warb., and information on its role among the Witoto, Muinane and Bora tribes was offered from observations and statements of Indians now residing near Leticia, a Colombian town on the Río Amazonas. The custom of ingesting pellets or pills prepared from the resin of this myristicaceous tree was reputedly common in the original home of these Indians: the general area comprised within the Ríos Karaparaná and Igaraparaná, Colombian affluents of the Río Putumayo.

A year later, in April 1970, the authors visited and carried out ethnotoxicological studies among the Witoto who live along the Río Karaparaná. Our additional information, gathered during a week of intensive field work in the settlements of El Encanto and San Rafael on this river, convinces us that *Viola* resin is taken orally over a rather wide area in the Colombian "Putumayo" for hallucinogenic purposes connected with witchcraft and magic. Since there are many Indians of the Witoto, Muinane and Boro tribes living south of the Río

Putumayo in Peruvian territory, there is every probability that the actual geographical area of oral use of the resin is wider than the Colombian territory. Furthermore, other tribes may also employ the drug orally in adjacent areas.

In 1970, we were able to witness the preparation of the resin for oral hallucinogenic use by Witoto witch-doctors or shamans, to collect botanical voucher specimens as well as material for chemical analysis and to gather from several sources pertinent information concerning the role of the drug in native medicine and magic practices. A noteworthy point in our brief field work is the indication that, even in this one limited area of the Witoto country along the Río Karaparaná, the preparation of orally administered *Viola* resin varies appreciably from one Indian village to another and likewise in accord with the way in which the drug is to be utilized.

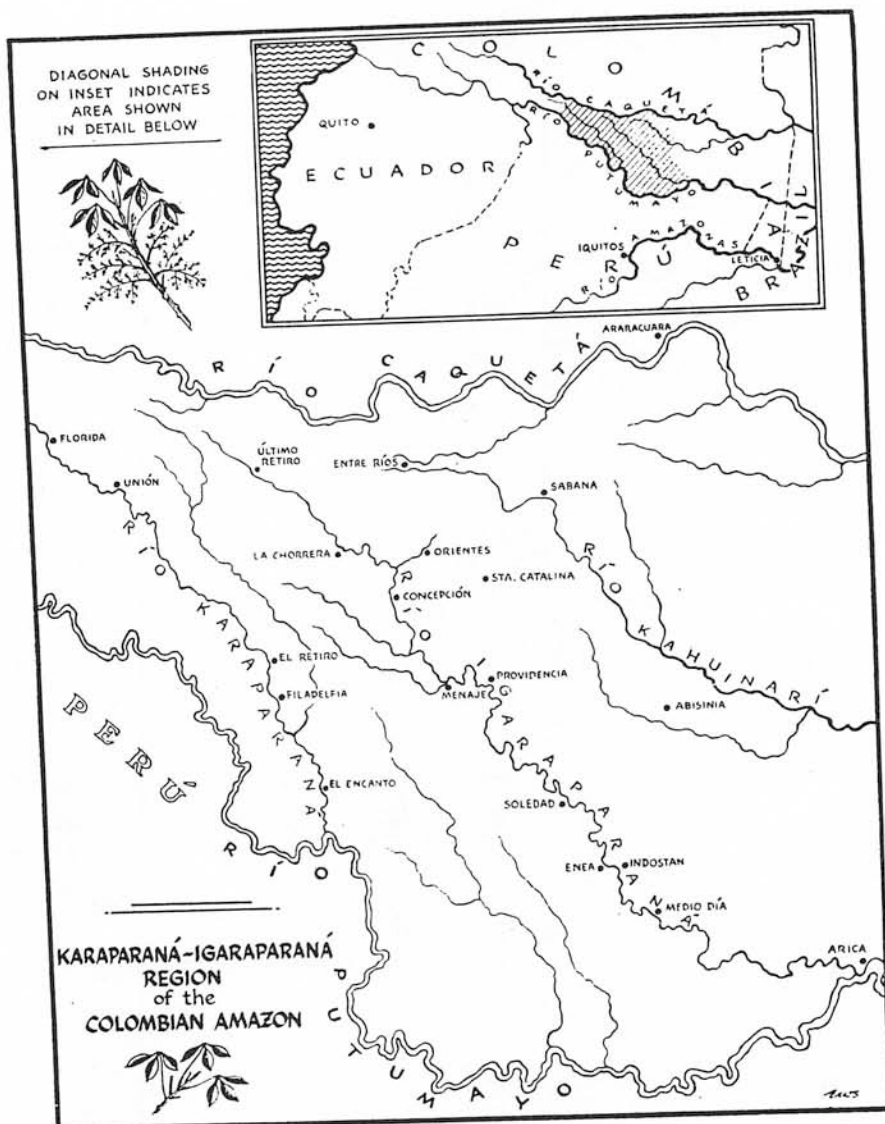
Two groups of the Witoto tribe — both living on the Río Karaparaná: one at San Rafael, the other at El Encanto — independently indicated the same species of *Viola* — *V. theiodora* — as the "best kind" of *oo-koó-na* (Schultes 26078). This species is most abundant along river banks. This observation corroborates the previous observation that *Viola theiodora*, collected in 1942 in the forest between El Encanto and La Chorrera (Schultes 3878) (an Indian settlement on the Río Igaraparaná), with the simple annotation "Red resin in bark intoxicating," is the source of a Witoto hallucinogen.

Another kind of *oo-koó-na*, growing on higher ground well above flood level of the rivers and with

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much larger, thicker leaves that are whitish beneath, is said to be employed in those regions away from the main rivers. All Indian reports assert that the highland species is inferior in hallucinogenic potency. Although voucher specimens of this second *oo-koó-na* could not be collected due to shortness of our stay, there is a strong probability — if we are to judge from the natives' descriptions of the plant — that it represents *Viola calophylla*, which is known to be employed as an hallucinogen in other areas of Colombia (Schultes & Hofmann 1973).

With agreement on the principal species of *Viola* employed, the simplicity of this ethnobotanical problem ends.

Viola resin for oral administration may be prepared alone or may be admixed with the dried filtrate of ashes

of a number of other plants.

The first step in either method of preparation consists in the proper collection of the *Viola* resin. This operation is done in the forest. The bark is first stripped from the lower part of the trunk. The shiny cambial layer from the inner surface of the bark and from the surface of the decorticated trunk, all of which gradually turn brownish red, is scraped off with the back of a machete and the raspings are gathered in a small cup or gourd. When as much of the trunk as can be reached is worked over in this way, the tree is felled, and the same process continues along the whole length of the trunk up to the main branch point. As soon as the trunk is thus decorticated, the Indians return as quickly as possible to the house with their supply of the still moist raspings (*Witoto* = *oo-koó-yo-ko*). These raspings, comprising

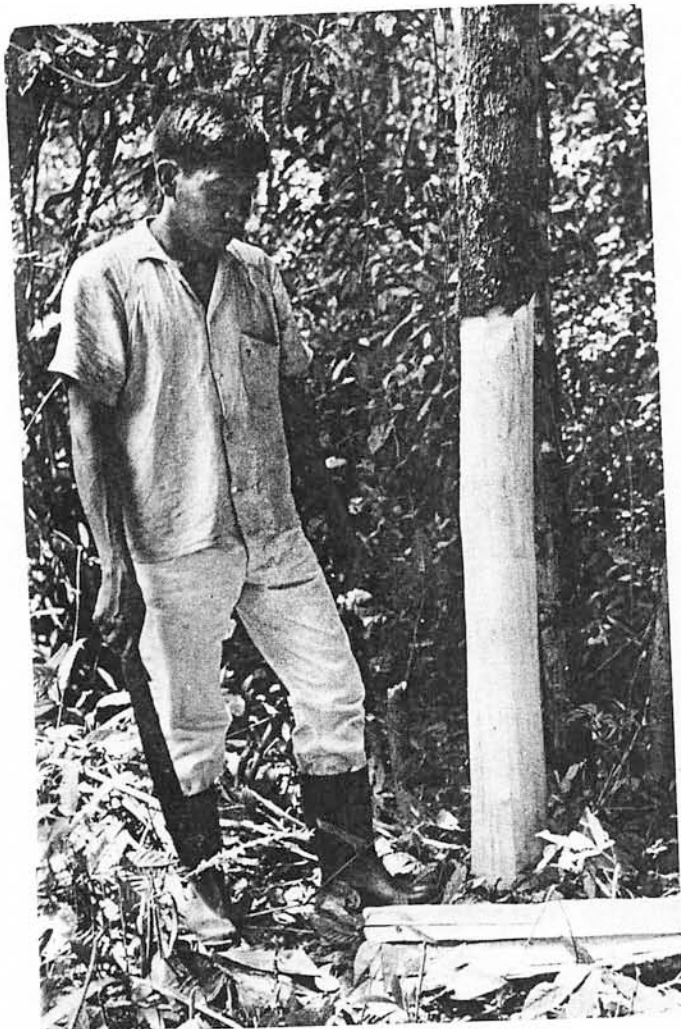


FIGURE 1

Scraping the bark from the basal portion of a trunk of *Virola theiodora*. Río Karaparaná, Colombia.

mostly cambial material, are immediately kneaded thoroughly with the hand and repeatedly squeezed and pressed over a thick wicker sieve (made of *Ischnosiphon* sp.). The liquid passing through is collected in a gourd or tin and has a light "coffee and milk" color; it consists predominantly of cambial sap. The Witotos refer to it as *oo-koó-bee*, the same term that is applied to the thick resin itself as it exudes from a slash on the living tree.

Without further preparation, this thin liquid is quickly brought to a boil, perhaps to inactivate enzymes which might destroy the active principles, and then allowed to simmer to reduce its volume. It is occasionally stirred, and the congealing resin along the upper edge of the vessel is scraped back into the simmering liquid with a stiff loop (like an egg whisk) cut from a palm leaf. When the liquid finally assumes a

thick, pasty consistency it is ready for use; the vessel is removed from the fire and the paste (Witoto = *oo-koó-boo*) is rolled or broken into pieces of varying size for immediate use. The paste will harden if left, however, and, according to the natives, will keep its hallucinogenic potency for up to two months, after which it rapidly deteriorates.

In earlier publications, it has been implied that the hallucinogen is present mainly in the almost colorless exudate from the inner surface of the outer bark which appears as soon as the bark is stripped from the tree (Agurell et al. 1969; Schultes 1970; Schultes & Hofmann 1973). This "resin" quickly turns reddish in a typical oxidase-type reaction and darkens, drying to a hard shiny mass. In specimens of bark dried for chemical



FIGURE 2

Continued scraping of the bark from the trunk of a felled tree of *Virola theiodora*. Río Karaparaná, Colombia.



FIGURE 3

Rasping the cambial layer from the inner bark and stem of *Virola theiodora*. Río Karaparaná, Colombia.

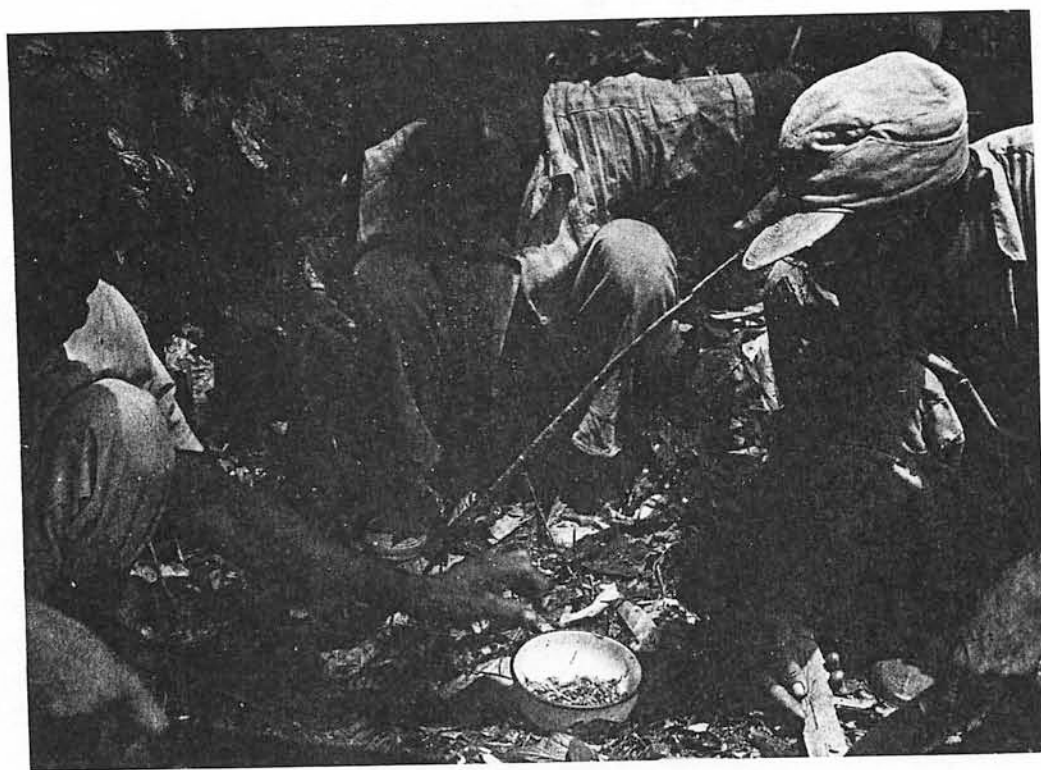


FIGURE 4

Gathering the cambial raspings of *Virola theiodora* into an enamel tin.



FIGURE 5

Kneading the cambial raspings in water.

analysis, it appears as a sticky, dark reddish brown, gummy material which has been shown to contain tryptamines and other indolic hallucinogens (Agurell et



FIGURE 6

Allowing the water from the cambial raspings to drain through a sieve.

al. 1969).

Careful observation of the process, however, indicated that the only reason for scraping the inner surface of the bark (phloem) was to obtain all traces of cambium which might have adhered to it. The drug itself was prepared from the cambial sap only, which was first quickly boiled, causing coagulation of protein and perhaps polysaccharides, and then simmered slowly to reduce the volume to near dryness. This gave the sticky brownish material from which the "resin" pellets were prepared. The consistency of these pellets was unlike that of the bark exudate either in the fresh or dried state.

The whole process is similar to that used for the isolation of natural products from the cambium of other

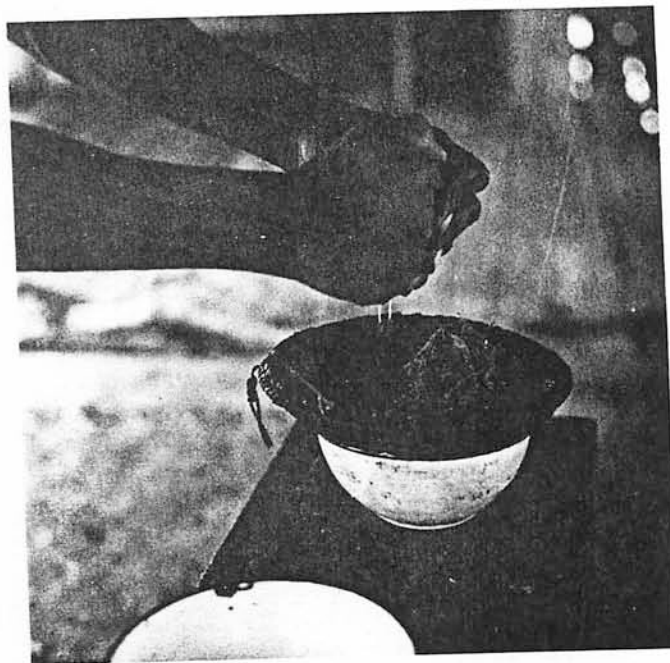


FIGURE 7

Squeezing the last of the water from the cambial raspings through a sieve.

trees, such as coniferin from gymnosperms, for example; except that today one would employ ethyl alcohol or acetone, rather than heat, to destroy enzyme activity which might otherwise act adversely on the desired product.

The pellets of *Virola* resin may be ingested without any admixture to produce hallucinatory experiences. They may also — and especially when they are not for immediate consumption — be coated with a "salt," as the natives say, prepared from any of a number of plants. These "salts" are made by the same process,

regardless of the source species. The plant material is first burned; the ashes are then collected and placed in a crude funnel-filter usually made of leaves. Cool water is slowly dropped on the ashes and allowed to seep gradually through the mass, dripping out through a hole

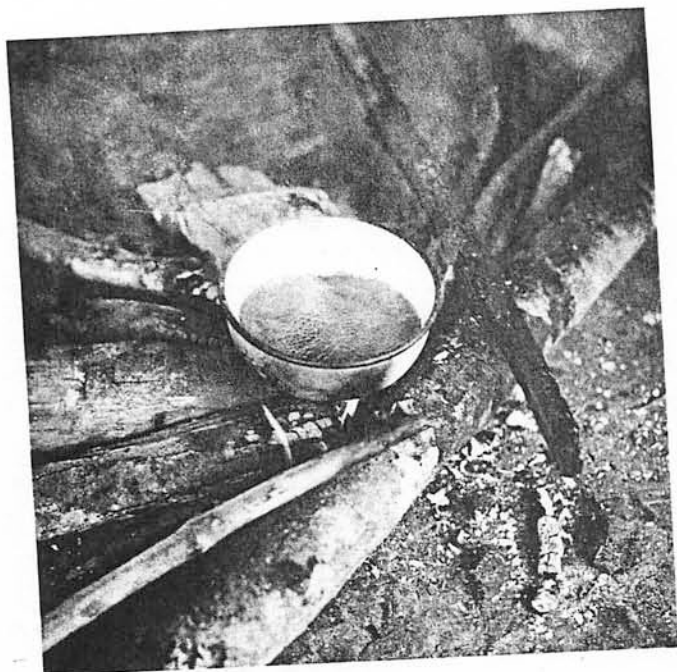


FIGURE 8

Setting the liquor from the cambial extract to simmer.

at the bottom to be collected in a container beneath. This process is carried on until "no more cloudiness leaches out." The Indian in charge of the operation then slowly boils down the filtrate, until a grey-white residue or "salt," known in Witoto as *lě-sa*, is left.

The pellets or lumps of sticky *Viola* resin are then rolled in the salt-like powder which adheres to the resin. If they are not meant for immediate consumption, the pellets are set aside to dry and harden for later use. According to the natives, the "salt" from some plants employed are said to be "better" than that from others, but an interesting and botanically very diverse array of plant materials is used in the preparation of the "salts."

In an earlier paper (Schultes 1969), the bark of the lecythidaceous *Gustavia Poeppigiana* Berg ex Martius was reported. This was the species indicated by Witoto Indians residing near Leticia. The Witoto called the tree *hě-rog*, but it now appears that *hě-rog* may be a generic term for any plant employed as the source of the "salt" for coating the *Viola* pellets, even though each plant may also have its own particular name.

Our ethnobotanical studies on the Río Karaparaná

disclosed as the source of these "salts" at least seven different plants. We were able to collect five of them, although all but two collections were in sterile condition.

Two of the seven are lecythidaceous. One is identified on the basis of sterile material as *Eschweilera itayensis* Kunth (Schultes 26074). It is a huge tree, 100 feet in height, growing on high ground. Its bark is tawny yellow, and the white wood is fibrous. Its Witoto name is *bá-jě-na*. The bark with a little of the wood is stripped off for burning. Indians claim that the "salt" from this tree is the "best" and "strongest" of all kinds of *hě-rog*. Another lecythidaceous tree, smaller and growing in flood land and with "large, white flowers," is called *cha-pě-na*. No specimens were available, but there is every probability that this tree is a species of *Gustavia*.

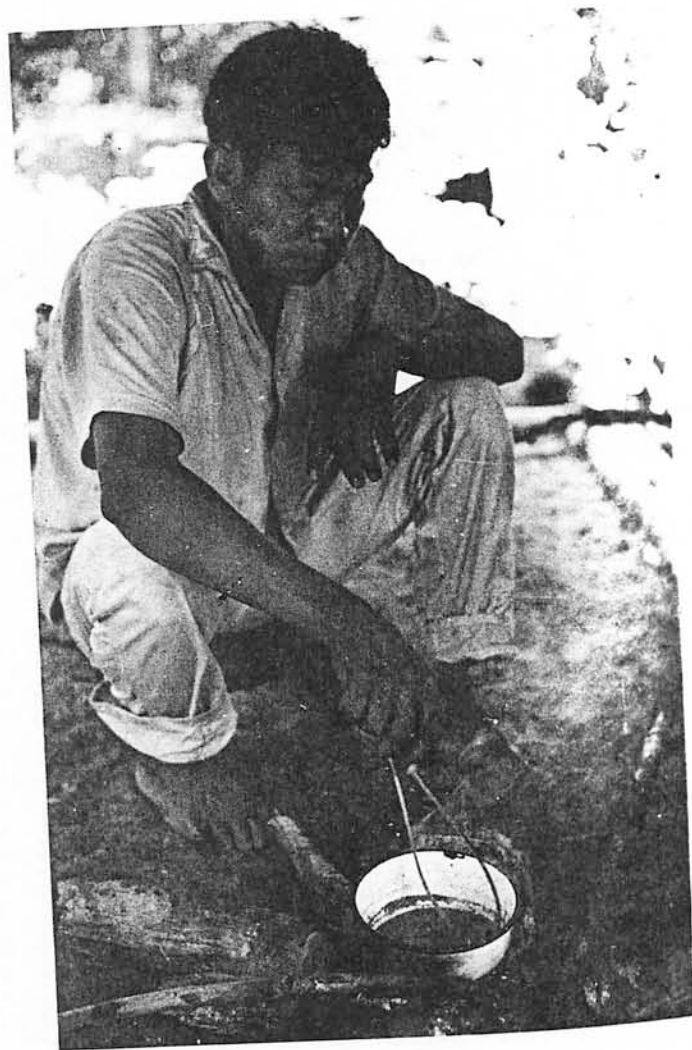


FIGURE 9

Scraping the congealed "resin" back into the simmering liquor.

possibly the same as they employed by the Witotos who now live in Leticia: *G. Poeppigiana*. The bark only is gathered for burning.

The other *bě-rog* plants are said to yield an inferior kind of "salt." The root (rather fibrous and woody and



FIGURE 10

Scraping together the thick syrup left from boiling the aqueous extract of the cambial material, preparatory to the making of pellets for ingestion.

difficult to dig out of the swampy ground), leaves and inflorescences of *Spathiphyllum cannaefolium* (Dryand.) Schott (Schultes 26075) are reduced to ashes for leaching out a "good quality" *bě-rog*. This plant has the Witoto name *djě-gai-rě*. The woody stump of a very large cyclanthaceous plant — on the basis of sterile material referable probably to *Carludovica* or *Spbaeradenia* (Schultes 26076) — growing epiphytically on the ground or on rotten logs, is burned to ashes and similarly leached. It is called *ay-mo-ko-gě* by the Witotos. Still another plant, for which material was not available, represents a tree said to be related to *Theobroma Cacao* L. but, according to native descriptions, "with longer and narrower leaves." Known in Witoto as *mee-ně-ro*, it may be *Theobroma subincarum* Mart. The leaves and twigs of this plant are the parts burned for the ash.

A slender palm, up to 10 feet tall, with white flowers and a purplish grey inflorescence axis is another favorite source of *bě-rog*. It is *Geonoma* cf. *juruaana* Dammer (Schultes 26077). The trunk and leaves are

burned for the ashes. The Witotos call this palm *wō-kai-nō-we-rě-rě*. Another palm, similarly used, is a spiny treelet up to 20 feet tall; although voucher specimens were not available, it represents almost certainly a species of *Bactris*.

Whether or not the "salt," when coated on the pellets of *Virola* resin, has any effect on the potency or character of the hallucinogenic effects or enters in any way directly into the biological activity of the narcotic preparation is unknown. Whether or not these "salts" from the sundry plants differ enough to have varied effects should they indeed enter into the biological activity of the total preparation we likewise cannot now say. The natives, however, insist strongly that there are differences, that one "salt" may be "better" than another. We have learned that many of the assertions



FIGURE 11

Trunk of *Eschweilera itayensis*, from the bark of which the favorite "salt" is prepared for coating the *Virola* pellets.

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made by Amazonian Indians do indeed warrant serious scientific consideration, and we believe that this represents one of these cases.

It is interesting and probably also significant to note the parallel in the Witoto preparation of "salts" or ash-filtrates as an admixture with the tobacco (*Nicotiana Tabacum* L.) syrup — known as *ambũ* — which they apply to the gums and use together with coca powder (*Erythroxylon Coca* Lam.) in tribal councils (Schultes 1945).

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Botanical specimens cited have been deposited in the Economic Herbarium of Oakes Ames in the Harvard Botanical

Museum and in the Herbario Nacional de Colombia in Bogotá.

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