

Tabernanthe iboga: an African Narcotic Plant of Social Importance

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Tabernanthe iboga is an apocynaceous shrub native to the forests of Gabon and the northern Congo. First described in the late 1800's, it has been reasonably well studied by botanists. The roots of *T. iboga* contain several indole alkaloids, of which the most important, ibogaine, is a central stimulant and in large doses an hallucinogen. In Gabon, the roots are used in the initiation rites to a number of secret societies, of which the Bwiti is most famous. The plant remains to this day a central feature of local religion, and its spectacular effects have hampered native acceptance of Christianity in Gabon.

Introduction

Starting in the mid-1800's, a number of French and Belgian explorers began to report a remarkable plant that grew in Gabon and the Congo. It was a shrub about 3 or 4 ft in height, found in the wild and also cultivated in the vicinity of the native huts. The natives claimed that the root bark was a powerful stimulant and aphrodisiac; it doubled their muscular strength and endurance and enhanced their sexual prowess. A few tribes, especially in the Gabon area, discovered that larger doses of the roots would produce fantastic visions, although this amount could sometimes cause death as well. They soon incorporated the plant into the initiation rituals of their secret cults.

The discovery of the plant, indeed, may not have been by man but by boars in the jungle. Several accounts mention that the natives saw boars dig up and eat the roots of the plant, only to go into a wild frenzy, jumping around and perhaps fleeing from frightening visions. Porcupines and gorillas, according to the natives, occasionally did the same thing. At any rate, the human use of the plant was widespread by the time it was first observed by Europeans.

The earliest specimens of the plant to appear in Europe were brought from Cap Lopez in Gabon by Griffon du Bellay. His description, probably the first published, appeared in 1864 (98): "Iboga is not toxic

except at high doses in the fresh state. In small quantities, it is an aphrodisiac and a stimulant of the nervous system; warriors and hunters use it constantly to keep themselves awake during night watches. . . ."²

In 1889, Professor Henri Baillon offered the first botanical description of the plant (7). He named it *Tabernanthe iboga*, although he cautioned that the plant might later be accommodated in the neighboring genus *Tabernaemontana*. Later, Stapf described a number of other *Tabernanthe* sp. (there are now seven) and stabilized the genus.

By the turn of the century, chemical investigation of the roots of *Tabernanthe iboga* was underway, and in 1901, its principal alkaloid, ibogaine, was isolated (36, 37). A flurry of studies with animals showed that ibogaine was indeed a potent central stimulant. Although Phisalix suggested in 1901 (40) that the drug could produce hallucinations, it was not until recently that the hallucinogenic properties of ibogaine were clearly established, thus confirming the many published accounts of native use of the root in initiation rites.

During this century, *Tabernanthe iboga* has been the subject of scores of chemical and pharmacological studies, most of them French. New observers in Gabon and the Congo have described the increasing native use of the plant. But little has been done to bring together this material, except for a few theses in French and German, all more than 15 years ago (1, 2, 3, 5). The purpose of this paper is to present, for the first time in English, an up-to-date summary of what is

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² Translation mine for all French references.

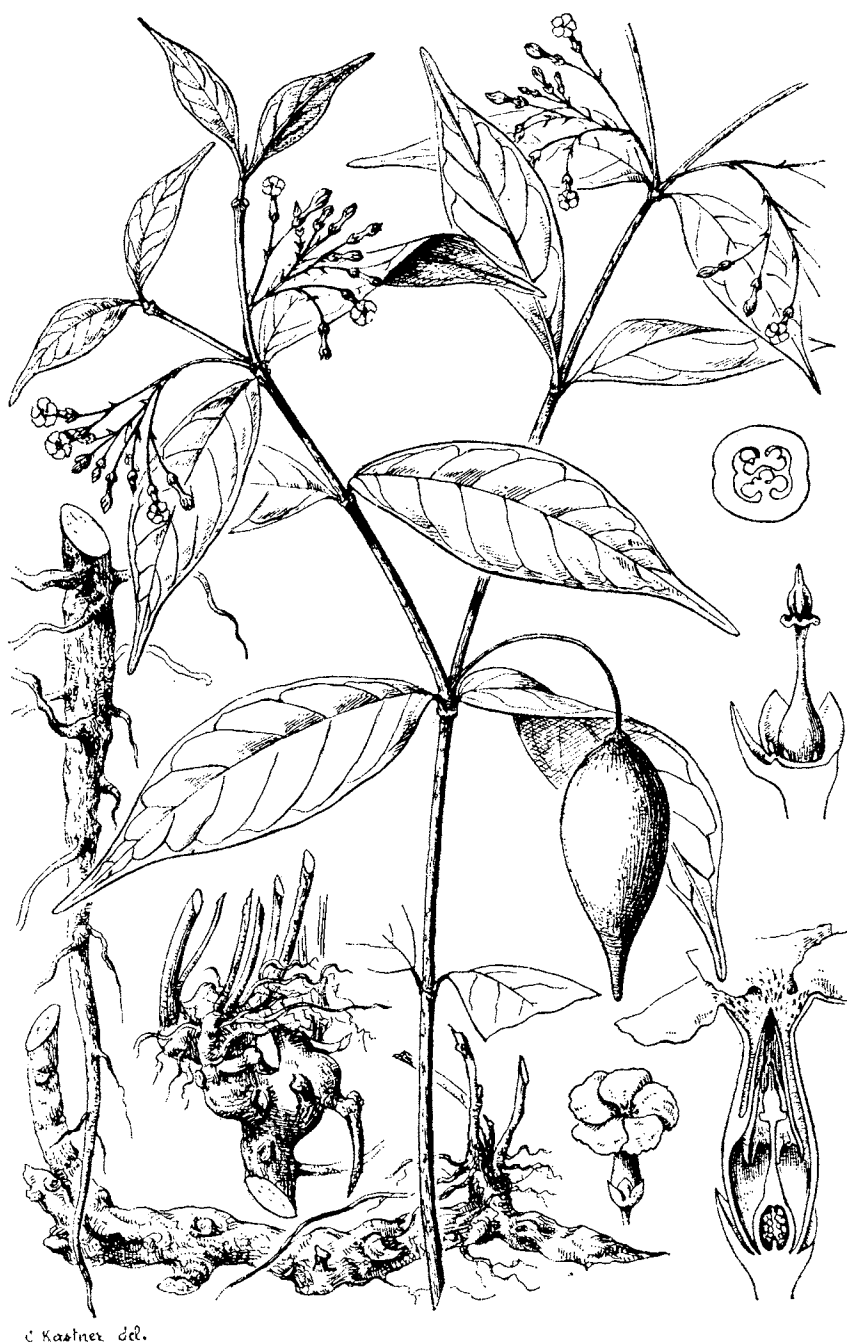


Fig. 1. *Tabernanthe iboga*. From Albert Landrin (4).

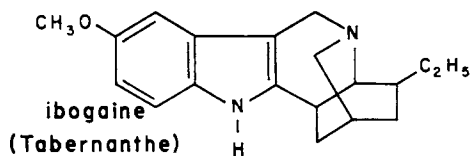


Fig. 3. Structure of ibogaine

tightly wrapped together. The corolla, as already indicated, is long relative to its width, with a flat spreading limb at right angles to it. The corolla reaches about 0.6 cm in length and the lobes, about 0.3 cm. The anthers are about 0.2 cm long, and the style is typically 0.15 cm in length.

The fruits contain essentially none of the root alkaloids, although the seeds contain small amounts of other alkaloids (not studied to date). The fruits are oval, about the size of an olive, yellow-orange, usually hanging in pairs. They are about 5 cm long, generally ending in a point which sometimes is slightly curved. The pericarp is smooth, about 0.2 cm thick. The mesocarp is pulpy and white. The brown seeds are about 0.3 cm long and 0.25 cm in diam, each fruit with from 20–30 of them.

The stems, which contain small amounts of the alkaloids, vary from 0.2–2.0 cm in width. They contain also a large amount of latex, with a vile odor typical of all the members of this and related genera. The branches are often curved and bent back on each other, and scars are sometimes visible at the points where the branches are attached.

The roots, where most of the alkaloids are found, are rather similar to those of *Rauwolfia*, another apocynaceous genus with indole alkaloids in the roots. The bulbous mass at the apex of the root system, just below the ground, varies from 2–10 cm in diam, depending on the age of the plant. The individual roots, branching in all directions from this mass, may extend between 50 and 80 cm in the mature plant. It is the bark from these roots, especially the smaller ones, that is most preferred by both the wild boars and the natives. The color of the roots is brown in the fresh state and gray when dried.

There are dozens of native names for *Tabernanthe iboga*, varying from tribe to tribe. The most common is "iboga," but it

is also known as "éboga," "boga," "libuga," "bocca," "ébogé," "lébogo," "lébuga," "dibuga," "diboga," "dibuyi," "dibugi," and several other similar names.

Tabernanthe iboga is often confused with *T. manii* and to some extent with other members of the genus. In Gabon, many tribes distinguish between the two. Walker (35) offers the following comparison:

T. iboga: Elongated fruits, ending in a point; corolla about 0.5 cm long. Native names: mbasoka (Mitsogo tribe), kuta mbasoke (Apindji), moabi (Bavungu), gifuma (Eshira).

T. manii (probably): Ellipsoidal fruits, shaped like tiny lemons; corolla about 0.8 cm long. Native names: nyoke (mitsogo), dinyoke, oabé (Apindji), mungondu (Bavungu, Eshira).

It is worth noting at this point that at least one pharmacological study was carried out using *Tabernanthe manii* rather than *T. iboga* (54). There is no reason to think that this investigator may have misidentified his material, inasmuch as the two plants have very similar reported pharmacological properties.

Tabernanthe iboga is a very common plant in many of the areas where it grows, although in some parts of Gabon it has become rare as a result of excessive use. It has been reported throughout Gabon, and from a number of places in the Congo: Coquilhatville, the basin of the Nsele River, the Tshuapa, the Maringa, the Lopori, the Ikelemba, the Sankuru, and the Kasai. It is also very common in the Kwango and Kwilu areas, and also near Likimi and Ponthierville. Fig. 2 traces its known range.

The Alkaloids of *Tabernanthe iboga* and Their Pharmacological Properties

The chemical study of the alkaloids of *Tabernanthe iboga* began in 1901, when ibogaine was isolated from the dried root material by two pairs of investigators, Dybowski and Landrin (36) and Haller and Heckel (37). Ibogaine is by far the most abundant alkaloid in the roots, and it is responsible for most of the pharmacological properties. Its structure, shown in Fig. 3, contains the indole nucleus typical of many hallucinogenic drugs. Starting in 1942 other

alkaloids were found, the most important being tabernanthine, ibogamine, and iboluteine. All are quite similar to ibogaine in structure. At the present time, at least 12 alkaloids are known in *T. iboga* (80).

The study of Delourme-Houdé (66) found 1.0–2.6% alkaloids in the roots and 5–6% in the root bark. These figures are probably lower than they would be for fresh material, because ibogaine tends to oxidize in solution and presumably in the undried root bark as well. The seeds contained a different alkaloid that gave strong lines in a spectrum analysis, but Delourme-Houdé did not have enough material to isolate it.

The pharmacological effects of ibogaine may be divided into three parts. First, ibogaine is a cholinesterase inhibitor. This was well established by Vincent and Sero (63) in 1942. They found that the crude extract of iboga root was considerably more potent than pure ibogaine in this respect, and they correctly theorized that other alkaloids in the extract were responsible for this difference. In 1960, Raymond-Hamet and Vincent carried out a study of the three lesser alkaloids just mentioned (83). All were found to be potent cholinesterase inhibitors.

In man, the principal effects noted as a result of the cholinesterase inhibition of ibogaine are hypotension due to decreased cardiac output and stimulation of digestion and appetite.

The second effect of ibogaine, by far the most prominent, is strong central stimulation. Landrin (4) first studied this effect in frogs, guinea pigs, and dogs. The effects were similar to a large dose of caffeine in all three animals. Toxic doses sometimes produced convulsions, almost invariably paralysis, and finally an arrest of respiration. The recent study of Schneider and Sigg (78), using cats and dogs, confirmed Landrin's findings. Using eight-channel electroencephalographic recording, they determined that one of the sites of action of ibogaine is in the ascending reticular formation. Studies of reflexes in this experiment excluded a strychnine-like component in the action of ibogaine. This is highly consistent with Landrin's data. Landrin found paralysis rather than strychnine-like convulsions in the final stage of ibogaine poisoning.

Very little has been done to study the central effects of ibogaine in man. The best information was reported by Pouchet and Chevalier in 1905 (42). They recorded that a Dr. Huchard was using doses of 10 to 30 mg for influenza, convalescence from infectious disease, neurasthenia, and a few cardiac disorders. He found that the drug improved appetite, muscle tone, and general rate of recovery. He also noted a mild euphoria in almost all of his patients, similar to that produced by other stimulants.

By far the least studied effect of ibogaine is its ability to produce hallucinations. This was first suggested in 1901 by Phisalix (40). After an injection of ibogaine, his dogs acted as if they were seeing frightening things; they would suddenly begin to bark loudly at nothing, leap backwards, or try desperately to hide in a corner. Nearly 60 years later, Schneider and Sigg, in the study already mentioned, observed very similar behavioral changes in both cats and dogs. The animals exhibited ataxia, peculiar positions of the legs, partial piloerection, pupil dilation, alertness, outstretched tails, and increased respiration—a picture of fear or rage.

Of course, many of these behavioral observations could be interpreted as due to the central stimulant properties of ibogaine, or it could be hypothesized, as Turner (73) and Gershon and Lang (85) have done, that ibogaine produces a severe anxiety state without actually causing true hallucinations. However, Sigg personally took a dose of 200 mg of ibogaine and described the effects (81):

"Subjectively, the most unpleasant symptoms were the anxiety, the extreme apprehension, and the *unheimliche Grundstimmung* associated with visual and bodily hallucinations. The visual hallucinations appeared only in the dark and consisted of blue disks dancing up and down the walls. Dysesthesia of the extremities, a feeling of light-weightedness, and hyperacusis were other symptoms noted. Autonomic signs, such as dryness of the mouth, increased perspiration, slight pupillary dilation, and increase in pulse rate, as well as extrapyramidal symptoms (fine tremors, slight ataxia, enhanced tendon reflexes and clonus) were also present and confirmed by Dr. Schneider.

The peak effect was reached about two hours after swallowing the drug; it subsided gradually, leaving as a residue complete insomnia. No undesirable after-effects, such as exhaustion or depression occurred. It is worth noting that, unlike ibogaine, mescaline, which I took some time ago, transferred me into a quite pleasant imaginary state."

Although this is the only published account of the effects of a large dose of ibogaine on a white man, it seems clear that the drug is a bona fide hallucinogen, likely to produce anxiety. The hallucinogenic dose is several times the normal stimulant dose, so that the user must endure intense and unpleasant central stimulation in order to experience the hallucinogenic effects.

These results agree well with observations of *Tabernanthe iboga* use by the natives of Gabon. The reader will do well to bear them in mind in the consideration of the social importance of the plant, discussed in the next section.

Ethnobotanical Aspects of *Tabernanthe iboga*

Tabernanthe iboga is used by African natives throughout its range, and it is even exported into neighboring areas. It is probably most popular in Gabon, the only area where it has been observed to be in cultivation. The roots of *T. iboga* are most widely employed as a stimulant and aphrodisiac, but in Gabon the plant is equally important as a hallucinogen.

Many writers have published glowing accounts of the stimulant properties of *Tabernanthe iboga*. For example, Steinmetz (84) claims that it allows the natives to sit awake and motionless for as long as two days while waiting for game. Brzezicki (54) states that, by eating the roots, the natives manage to double the length of their day's march and the weight of what they are carrying without noticing the extra effort required. Although both of these descriptions may reflect some local hyperbole, they are reasonably consistent with the pharmacological findings.

Dybowski and Landrin, who originally isolated ibogaine, also consulted with the natives and recounted their replies as follows (36): "When asked by us, they always

replied that the action of iboga was identical to that of alcohol, but without disturbing the thought processes." These researchers concluded this to mean that the plant was a simple stimulant. It seems, though, that the natives would have been more likely to compare the plant to the cola nuts (*Cola nitida*), with which they were familiar, rather than to alcohol, if they were seeking to describe a purely stimulating effect. On the basis of pharmacological evidence, it seems likely that even small amounts of iboga would produce marginal hallucinogenic effects, possibly a "dreamy" or "floating" sensation. This may explain why the natives chose to compare the effects to alcohol, rather than to the caffeine in cola nuts.

Iboga is greatly prized by the natives as an aphrodisiac. Indeed, Burckhardt (1) claims that it is "even more highly valued than yohimbine," a constituent of *Corynanthe yohimbe*, probably the most famous of African "aphrodisiacs." There is no pharmacological evidence that ibogaine directly stimulates sexual functions, but the increase in confidence and lack of fatigue produced by its stimulant properties may easily account for its reputation. It is also possible that its hallucinogenic effects contribute. In other parts of the world, plants with primarily hallucinogenic effects, such as *Cannabis sativa*, have been claimed to be aphrodisiacs.

The most interesting use of iboga, however, is as an hallucinogen. Probably the first report of such utilization is that of Guien (97), who describes an initiate in a fetishist cult: "Soon all his sinews stretch out in an extraordinary fashion. An epileptic madness seizes him, during which, unconscious, he mouths words, which, when heard by the initiated ones, have a prophetic meaning and prove that the fetish has entered him."

Although Guien's description came from the Congo, near Ayenie, the center of use of iboga as an hallucinogen is Gabon. There, it is employed in the initiation rites of secret societies, the most famous of which is the Bwiti (also spelled Bouiti or Buiti). The story of *Tabernanthe iboga* in the Bwiti cult is a fascinating one, showing how a seemingly unimportant plant can have far-reaching social effects.

The Bwiti cult originated probably either

among the Mitsogo or the Apindji in central Gabon, in the area where iboga is most abundant. The cult has spread throughout Gabon during this century, and it now extends from Spanish Guinea to the Congo. It is best observed in the center of its influence, among such tribes as the Apindji, where it was recently studied by Swiderski (101). His description is one of many (see especially 94, 100, and 103), but, since it is one of the best, it is partly reproduced here.

One is said to be initiated into the Bwiti when one has "seen Bwiti" or when one has "eaten the iboga." To eat the iboga plant is the only way to see the vision of Bwiti, according to the lore of the cult. On the day of the initiation, the candidates go to the "temple of the universe," accompanied by their fathers and maternal uncles at six o'clock in the morning. There they are given two shallow baskets, each about 8 inches in diam, filled with raspings of iboga root. The priest stands in front of the boys and says, "See this stuff at your feet which you must like even though it tastes as repugnant as heavy oil. If I give it to you, will you consume it?" The boys reply, "Give, and I will consume it gladly." The priest responds, "Take it then, but with the mouth, not the hands."

Under the surveillance of the priest, fathers, and uncles, the boys gulp down the bitter and vile-tasting raspings. Throughout the day, the boys continue to eat iboga roots, encouraged by their guardians. It is not until late in the day that the candidates have eaten enough iboga to be able to see Bwiti.

The candidates begin the evening ceremonies with a ritual dance which includes all the members of the Bwiti in the tribe. At the end of the dance, the boys go off to a specially prepared hut where they eat still more iboga. A vigorous and joyous dance follows, and then, towards nightfall, the *lomba*, the central part of the ceremony, begins. A sorcerer dances for two hours and invokes the ancestors of the members. Then everyone participates in a torchlight dance. Amid the flames of the torches and the beauty of the equatorial night, with the effects of the iboga coming to a peak, the candidates begin to enter a trance. Soon everyone is silent; only the melody of the

mongongo, a sacred harp, is heard. The candidates begin to murmur among themselves, for they are beginning to see Bwiti. The visions continue for several hours, followed by a sleep which may last for five to seven days.

There are many variations in this pattern. Sometimes, the initiate is sent into the forest for several days after eating the iboga (99). Sometimes the iboga is mixed with other plants, such as *Alchornea floribunda* (103, p. 203; 35, p. 160). Like iboga, this plant is also considered an aphrodisiac, especially among the Eshira, who use it frequently. It may well be an hallucinogen, too (103, p. 149), because it is used in almost precisely the same way in the initiation to another secret society, the Byeri, which is prevalent among the Fang and the Eshira. Some concoctions in Gabon may involve as many as ten plants. Many valuable drugs may await discovery in this area.

The sacred iboga appears at several other points in the life of the Bwiti. Sorcerers employ the iboga before demanding information from the spirits. The leaders of the cult eat iboga for an entire day before asking advice of the ancestors, topping it off with an infusion of the root bark, which is served in a manner similar to the Christian communion.

It is a striking fact that the Bwiti cult has been expanding rather than disappearing during the past 50 years, despite a great deal of missionary effort. It has become probably the greatest single force against Christianity in Gabon, backed by the proverb, "Iboga and baptism are not compatible." The cult has adopted many of the rituals of Christianity, sometimes deliberately parodying them, and woven them together with the old beliefs. In recent years, the cult has helped to unify all the tribes against the innovations of the West. Some have wondered where it could get such an appeal, but this is not hard to see when one considers its powerful rituals, its promises of actual visions of God under the influence of iboga, and compares them with the unexciting alternatives of Christianity. Iboga and baptism are indeed incompatible, and there is little question as to which would appeal more to an African tribesman. Perhaps the most striking account of this comes from Georges Balandrier's ac-

count of recent developments in Gabon (94):

"This new faith exerts an undesirable attraction in several districts. It creates outlets for intense energies and demands those extreme psychological experiences which the Negro likes periodically to undergo. It demands a complete transformation of self, a liberation from a standardized and difficult existence. It restores order and confidence where the forces of disorganization,—and hence of insecurity,—have flourished."

Here is Balandrier's description of an all-night ceremony in one of the largest temples of Southern Gabon:

"The priest and his assistants had made their preparations in a private place. They had shared a concoction made from the grated rind of a plant named *ibo'a* (*Tabernanthe iboga*), a hallucinogen and an aphrodisiac. Their interminable dancing would reinforce these effects and carry them all, so they said, to the frontiers of true understanding and to the sources of power. . . .

"Then the dancing began around each of the poles dominating the architecture of the temple, a series of jumps, stamps, leaps, and movements, which might be described as compulsive. The torsos of the men streamed with sweat and their muscles stood out under the play of the lights. From time to time one of them rushed over to a pail of water, drank great draughts, and then resumed his intoxicated motion. The congregation sang and accompanied the priest by dancing in place. The women shook their rattles, the only instruments which provided an occasional musical accompaniment. The rhythm accelerated. The group had become a single creature, tensed for an impossible victory. I felt profoundly foreign, separate, trapped by my human dignity, encumbered by a body which had lost even the memory of its glorious potentialities. I felt like a kind of cripple to whom no one could pay even the slightest attention. . . .

"What does our civilization offer that is capable of arousing a fervor of this kind, an involvement spelling adventure for the body as well as the mind? Our churches put inner life and moral principles ahead of that exaltation which leads to the threshold of unconsciousness. They seem cold, devoid of supernatural presence, ill-suited to impassioned communion. In the eyes of the vil-

lagers, the missionaries are so many 'wet blankets' in the celebration of the fulfillment of man and the glory of the gods."

In this way a little known jungle plant has helped to unify an entire people and to block successfully some of the influence of our own civilization. Unless there are profound changes in missionary policy or in the Bwiti cult, it will continue to have a great deal of social importance in Gabon.

Acknowledgments

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