REBAJE PALO: A CASE STUDY AMONG THE INDIGENOUS HEALERS OF IQUITOS (PERU)

CLAUDIO MAZZATENTTA
The City University of New York, Bronx Community College, Biology and Medical Laboratory Technology Department, Bronx, NY 10453, USA; email: claudio.mazzatenta@bcc.cuny.edu

ABSTRACT: This study was conducted in the city of Iquitos (Peruvian Amazon) where the vast majority of indigenous healers use the psychotropic beverage ayahuasca, which owes its powerful effect mainly to the combination of two plant species, Banisteriopsis caapi (Spruce ex Griseb.) C.V. Morton and Psychotria viridis Ruiz & Pav. Brebaje palo is an alternative psychotropic drink, which has a similar effect to that of ayahuasca but is prepared with other plants. This research aimed to understand the preparation, the modality of the healing session, the efficiency, and the pharmacognosy of this drink and compare it to ayahuasca. It was found that brebaje palo, made with bark of different plants, has similar characteristics to ayahuasca. Alkaloids are present in brebaje palo and this could explain the psychotropic activity of the beverage that may be considered an alternative to ayahuasca. Recently, the ecological sustainability of the species used as ingredients of brebaje palo and ayahuasca was studied, as they might be threatened due to the intense and indiscriminate use in the region.

KEY WORDS: Ayahuasca, brebaje palo, ethnobotany, hallucinogenic plants, Peruvian Amazon.

INTRODUCTION

It is quite challenging to define “normal” consciousness and “altered” state of consciousness. Tart (1990, p. 1) suggested that “for any given individual, his normal state of consciousness is the one in which he spends the major part of his waking hours”. There is evidence that for millennia people have used certain plants to induce altered states of consciousness. In fact, seeds of such plants were found in deep strata dated back, by radioactive carbon studies, between 8440 and 8120 B.C. (Naranjo, 1995). Quite often these plants, called psychoactive, were used during rituals, ceremonies, and healing practices.

The research presented in this article was conducted in Iquitos, a major city in the Peruvian Amazon. Over time, people from different regions migrated to this area, which was very active during the rubber boom, in
search of job opportunities either in the lumber and petroleum industry or in other enterprises based on natural resources (McKenna et al., 1995).

This multitude of people has generated an interesting social structure influenced by many cultures combined and mixed together. The richness of the forest and the belief in local healing practices, quite different from the conventional Western tradition, resulted in common usage of the powerful drinks prepared from plant material by indigenous healers (shamans). Western missionaries either did not understand the culture of the region or preferred to disregard it (Luna & Amaringo, 1991), and even when Western religion was imposed, indigenous people were able to preserve their original beliefs over time. These people believe in a cosmology that is a combination of supernatural powers found in the forest, underwater, and underground, which has an impact on the life of human beings causing either wellness or illness (Sullivan, 1988).

Indigenous people of Iquitos still favor their own indigenous healers, not only because of their traditional belief, but also because modern health care is not affordable, not available, too far, or simply because of mistrust in modern medicine and technology. The healing process is quite often associated to drinks prepared with psychotropic plant material, but no other drink gained more attention than ayahuasca (McKenna, 2004), because this name has been associated to “drug tourism” (Dobkin de Rios, 1994, 2005, 2006) as well as to pharmacology and therapy (McKenna, 2004; Winkelman, 2005).

In the Peruvian Amazon, indigenous healers identify (Mabit et al., 1992) with ayahuasca [Banisteriopsis caapi (Spruce ex Griseb.) C.V. Morton], and the drink itself made mainly by B. caapi and Psychotria viridis Ruiz & Pav. (chacruna), even if other plants sometime may be added.

Luna & Amaringo (1991) show the two plants ayahuasca and chacruna deeply intertwined, as two multicolor snakes: one, ayahuasca, coming out from the vine, and the other, chacruna, releasing from its mouth a violet radiation that penetrates the mouth of the first snake. This symbiosis indicates that the two plants must be fused together to be psychoactive.

The proposed pharmacognosy of the ayahuasca drink is explained as follows: monoamine oxidases (MAO) are enzymes that decompose, when taken orally, compounds with amino groups such as tryptamine (e.g. dimethyltryptamine - DMT), which, if not decomposed, could reach the brain and cause psychotropic effect. Beta-carboline, such as harmine, harmaline and harmar, are strong inhibitors of MAO (Udenfriend et al., 1958), and therefore can prevent oxidation of compounds such as DMT. The ayahuasca drink contains beta-carboline (Banisteriopsis) and DMT (Psychotria), so the beta-carboline act as a MAO inhibitor (MAOI) and protect DMT, which, in turn, reaches the brain and becomes psicoactive (McKenna, 2004; McKenna et al., 1984a, 1984b). Schultes & Hoffman (1980), recapitulating ayahuasca history, indicated that:

“The hallucinogenic effects of ayahuasca preparations may be the result of the combined activity of harmine and its derivatives with dimethyltryptamine and other tryptamine derivatives which were found in certain admixtures to ayahuasca such as Banisteriopsis rusbyana (Nied.) C.V. Morton and Psychotria viridis Ruiz & Pav. The MAO inhibitors harmine and harmaline may enhance the effects of the tryptamines. It should, however, be borne in mind that the narcotic is still hallucinogenic even when, as often is the case, it is prepared exclusively from species of Banisteriopsis without the tryptamine rich additives.”

Luna & Amaringo (1991) reported that, in Iquitos, the Mestizo (mixture of indigenous tribes and people of European descent) identify themselves as vegetalistas to indicate that they acquired knowledge and personal power directly from plants, and they are classified in different categories based on their plant knowledge:

“Among vegetalistas we find tabaqueros, who use tobacco; toeros, who use various species of Brugmansia; camalongueros, specialists in the use of the seeds of a plant that has thus far escaped identification; catahueros, who use the resin of catahua (Hura crepitans L.); paleros, who use the bark of various trees such as...
ayahuasqueros (Couroupita guianensis Aubl.), huacapu (Minquartia guianensis Aubl.), clavohuasca (Tynanthus panurensis (Bureau) Sandwith), chuchuhuasca (Heisteria pallida Engl.), chullachaki-caspi (Byrsonima chileniana W.R. Anderson), remocaspi (Aspidosperma excelsum Benth.), and many others; and perfumeros, who employ the scents of various fragrant plants. But, by far, most vegetalistas practicing in the Peruvian Amazon are ayahuasqueros, specialists in the use of ayahuasca.

Shamans are also very creative and try new things, such as mixing different plants together. Thus ayahuasqueros can also be paleros, if they also use the bark of palos to prepare the beverage, and then they are called ayahuasqueros paleros. The word palo comes from the Latin palus, borrowed from the ancient Greek palos, which means stick, and it refers to the straight structure of big trees, usually very tall, whose bark is used by the palero shamans. Paleros have gained an ambivalent reputation, because, even if their plants knowledge is outstanding, their healing practice has been tarnished, since it has been associated with witchcraft (Luna, 1984a): “And, of course, there are always ‘vegetalistas’ [...] who know more than him. These are paleros (from ‘palo’, a Spanish word meaning in this area something like ‘big tree’), who have taken very strong drugs from trees and dieted. Quite often the concept of palero is associated with that of a witch. That is because the temptation to use evil powers is stronger the more is learned, that is why there exists a hierarchy among shamans, depending on the knowledge they have, or in other words, depending on the number and type of plants they master.”

Many palos are very tall trees capable of resisting rains, winds, and flooding. These plants teach medicine to shamans if they take them and follow a proper diet. The strength of these trees can withstand the power of the elements and it can be transferred to shamans who will be strong and knowledgeable.

According to Perlmutter (2003/2004), the word palero has also been used to identify practitioners of Palo Mayombe, a syncretic Afro-Cuban belief that fuses elements of Afro Congo tribes and religious practices of Yoruba slaves and Catholicism: “Palo Mayombe, derived from the Spanish Palo meaning ‘wooden stick’ or ‘branch’ and referring to the pieces of wood practitioners use for their magic spells”.

Sanchez (2000) indicated that “The emphasis of the Bantu/Congo religious practices lies in the magical or sorcery aspects of African beliefs, in tandem with healing practices. The name ‘palo’ denotes the trunks and branches from the forest (el monte) utilized in the elaboration of a sacred object (nganga) used for spells. Often maligned, practitioners of Palo (paleros) are accused of practicing black magic or witchcraft, with rites utilizing corpses and dangerous herbs and spells for evil purposes.”

The establishment of a connection between paleros in Cuba and in the Peruvian Amazon is open to speculation, but these people certainly have in common a power derived from their knowledge and social status, their practice of healing and their association with witchcraft. Bettelheim (2001) said that Palo Monte has its origin in the kingdom of Kongo in Central Africa and stated that: “It is intriguing to speculate on the origins of its Spanish name, for within the religion palo monte refers to ‘spirits embodied in the sticks in the forest’. A palo is a segment of wood; monte is the forest or a rural area, where local rule is dominant. Palo also describes the sections of wood that form a palisade around a military outpost or rural stronghold. As such, the name of the religion reflects the reputation of people of Congo descent in Cuba; they are rural, strong, and strong willed.”

Dobkin de Rios (1972), who extensively studied ayahuasca in Iquitos, indicated that a large number of people from other countries had been attracted by this psychotropic drink generating a new trend called “drug tourism” (Dobkin de Rios, 1994). From his documented experience on the beverage, Winkelman (2005) reported positive comments by people who took it. Recently, Dobkin de Rios (2006) expressed her concern on the ecological sustainability of the plants used to prepare the beverage due to the rapidly growing number of tourists visiting the area.

The study here presented was inspired by information supplied by Luna (1984b), who
reported that an Iquitos shaman substituted chacruna with shoots of tangarana (Triplaris sp.) as an additive to the ayahuasca drink with positive results. Following this lead, between 1997 and 1998 an investigation was conducted in Iquitos to establish the possible use of other plants with psychotropic activity to substitute chacruna, which is very expensive on the local market (about US$ 30.00/kg). During this study, the initial research was undertaken with a palero, who used the hallucinogenic drink brebaje palo prepared without Banisteriopsis and Psychotria for his healing practice. Therefore, the investigation was expanded and the objectives of the present study are to increase the knowledge about brebaje palo, verify possible similarities with ayahuasca, and compare the two of them. Relevant also to the new concern on ayahuasca sustainable use in the Iquitos region (Dobkin de Rios, 2006), the data collected at that time were reexamined for study and discussion.

Often indigenous people either cannot afford modern medicine, hospitals are too far, or they mistrust the new technology. Thus, they often prefer to contact traditional healers, also because they have a different concept of disease and healing from that of the Western culture. Indigenous people believe in a connection between sickness and supernatural power.

The use of psychotropic plants allows access to information that will be used to prescribe the remedy to cure. Shamans differentiate plants that are purga and plants that are just medicinal. The word purga (purge) comes from Latin and means “to clear or free”. Shamans identify with purga the plant that “teaches” medicine (Luna, 1984b). Later, after interpretation of the information given by the patient under the influence of the purga the shaman can prescribe the remedy that is the medicinal plant. Therefore, the purga has only psychotropic effect to help the shaman to cure the patient. When shamans say that the purga cures all diseases, they refer to its psychotropic effect, which is the first step of the healing process. Only through the analysis of the information from the patient under the influence of the drink the shaman can provide appropriate prescription.

For modern medicine, this procedure cannot be considered scientifically approved. The healing skill of a shaman and his reputation among people is measured on his ability to provide the right remedy (medicinal plant) to the patients. If the patient can recuperate from his/her sickness news will be spread through the community and the shaman will gain social status as outstanding healer.

Dobkin de Rios (1972) interviewed many patients in Iquitos area and the healing of one of them is here reported:

“One day, Juana told of her experience with an ayahuasquero. She had developed a skin ailment which responded poorly to the pharmaceutical medicine prescribed by a town doctor. No one seemed able to help her. She finally visited an ayahuasquero and took the purge. While under the effects of the drug, she saw her mother in law (with whom she got on badly) prepare a concoction and slip it to her in a meal, causing her to become ill. She only visited the healer once. He gave her a salve to place on the ailment, and told her he would neutralize the magic and make her better. The skin problem cleared up almost immediately and since that time she had no occasion to return to the healer”.

**MATERIAL AND METHODS**

Hypothesis: Brebaje palo is a hallucinogenic beverage prepared without B. caapi and P. viridis that has similar effect to the ayahuasca beverage.

Research questions:
1) What plants are used to prepare the brebaje palo beverage?
2) How is the beverage prepared?
3) Who takes the beverage?
4) How is the healing session done?
5) Can the brebaje palo beverage be compared to the ayahuasca beverage?
   a) Which of the two beverages is more efficient for cure?
   b) Which of the two beverages is easier to prepare?
   c) Which of the preparations is more expensive?
d) How is the pharmacognosy of brebaje palo compared to that of ayahuasca?

RESULTS AND DISCUSSION

Shaman #1, Don Erasmo, said that he had been working for over 25 years with ayahuasca to cure, to see and to clarify things that somebody desires to see. He does not own a garden but goes instead to the forest to obtain plants. He prepares the drink ayahuasca with bark of ayahuasca (B. caapi), leaf of chacruna (P. viridis), bark or leaf of ipururo (Alchornea sp.), but the following plant material can be added: bark of ayahuma (Couroupita sp.), leaf of ciricosanango (Brunfelsia sp.), bark of cumaceba (Swartzia sp.), bark of huacapurana (Campsiandra sp.), bark of lupuna (Ceiba sp.), bark of remocaspi (Aspidosperma sp.), and leaf of toé blanco (Brugmansia sp.). When the ayahuasca mixture is strong, the healing power is said to be strong and effective for all diseases; however, it has never been tested for aids.

Shaman #2, Don Cristobal, said that he had been working with ayahuasca, which he prepares at home, for over 47 years. He does not own a garden, but instead he buys the plant material. He said that ayahuasca is a plant that teaches many things if one wants to learn by dieting and trying. He added that ayahuasca causes dizziness and chacruna causes hallucination (vision). Some healers mix the beverage with other plants, while he adds only chacruna to ayahuasca or toé blanco as alternative, but not toé negro (Teliostachys sp.), which is used for witchcraft (brujeria).

Shaman #3, Don José, said that he had been using ayahuasca for 52 years. He does not own a garden, but he buys the plants from a person who grows them in the forest. He was 12 years old when he first took the beverage and 18 when he started working with it after dieting for four years in the forest. He indicated that the word ayahuasca means “vine of the dead” (aya = soga = vine; huasca = muerto = dead, and therefore it is the “soga del muerto”), and also that the secret of the beverage is endless because every day something new is discovered.

The drink is taken as an intermediate to identify the illness and understand the plants required to cure it. Ayahuasca is mixed with chacruna (also called samiruca) because without these plants the drink has no strength. The leaves of chacruna are collected early in the
morning, washed and gently added when ayahuasca begins to boil. This mixture is cooked for 8 hours. Don José implied that this preparation of ayahuasca cures “350,000 diseases” and also drug addiction, such as to marijuana or cocaine, but it has never been tested for aids patients.

When the ayahuasca drink is mixed with other plants, a major diet is required to weaken the body. Additional material can be added to make the beverage stronger, such as tó blanco and sananq (Tabernae montana sp.), which can be dangerous since these plants can affect the blood with bruises on the skin, or creolin (chemical disinfectant), tobacco leaves (Nicotiana tabacum L.), roots of huasai (Euterpe sp.), and resin of catalhua (Hura crepitans L.). Don José also recommended not eating pork meat during the treatment. Regular diet lasts for 24 days, but if pork meat is eaten three additional days are required.

Shaman #4, Don Humberto, said that he had been working with this beverage for over 35 years, and that he is a palero and not ayahuasquero. He informed that some ayahuasqueros are also paleros, because they add plant material from palo trees to the drink ayahuasca, as indicated by Don Erasmo. Don Humberto said that he does not cure with ayahuasca (he uses neither B. caapi nor P. viridis), but with a drink called brebaje palo, prepared by mixing bark of different trees. The academic of the UNAP, who is a chemist, performed an analysis of this drink and confirmed that it contains alkaloids.

Don Humberto is a medico naturista (naturalist doctor), who owns a clinic with many beds and has an authorization from the Health Department of the City and additional licenses to practice “natural medicine.” He initiated his apprenticeship when he was 15 years old and practiced diet for three years. He also went to Belém, in the state of Pará, Brazil, to master his healing skills. There, he studied medicine in a building called A Bola de Cristal (The Crystal Ball), where it was also possible to learn Macumba, a syncretic belief characterized by mixed elements of African religions, European culture, Brazilian Spiritualism, and Roman Catholicism, considered by some people in a derogatory and offensive way, because of its association with witchcraft.

Don Humberto prepares brebaje palo with the bark of the following plants: ajos kiro (Cordia sp.), almedrno (Terminalia sp.), ayahuama (Couroupita sp.), azucar huayo (Hymenaea sp.), bubinsana (Calliandra sp.), capirona negra (Capirona decorticans Spruce), charapilla (Capsicum sp.), chullachaqi caspi (Remija sp.), cocobolo (Dalbergia sp.), cumazeba (Swartzia sp.), hucapu (Minquartia sp.), huayracaspi (Brosimum sp.), itauva (Mezilaurus sp.), machimangua (Eschweilera sp.), metohuayo (Caryodendron sp.), palisangre (Brosimum guianense (Aubl.) Huber), pucuquo (Simira sp.), remocaspi (Aspidosperma sp.), requia (Carapa sp.), tahuari amarillo (Tabebuia sp.), tahuari negro (Tabebuia sp.), tanamuri (Brosimum sp.) and he also adds tobacco (Nicoti na tabacum L.) to induce dizziness. He cooks equal parts (about 20 g of each ingredient) of about 10-12 pieces of bark of different trees to prepare the hallucinogenic drink. He said that it is good for all diseases (e.g. heart, head, and eye diseases).

It was possible to follow a ceremony carried out to cure a patient. The ceremony took place in a large room, where the master of ceremony, shaking the shapaya (musical instrument), recited prayers and sang icaros. The patient was in the middle of the room, while all the others waited on the sides of the room. The healing sessions take place on Fridays, beginning at about 10 pm, and they can continue until 3-4 am of the following day, depending of the number of patients, which might vary, and can be as many as 10 to 50 or more.

Don Humberto said he uses roots of huasahi (Euterpe sp.) to cure cancer, and bark or leaf of toronja (Citrus sp.) and leaves of achíote (Bixa orellana L.) to cure aids. Two adults, who were 35 and 21 years old, and an 8-year-old boy claimed to have been cured. Also, 12 drug addicted patients were cured with agua de achíote (B. orellana) and roots of sacha cilantro (Eringium sp.), which purifies the blood and the stomach, and leaves of tutumo (Crescentia cujete L.) to suppress appetite. For gastritis, 15 leaves of achíote (B. orellana) are boiled in one liter of water for 10 minutes, and the resulting beverage should be taken for three days.

Don Humberto also said that the vast majority of Iquitos shamans are ayahuasqueros, and that paleros are very few, and most of
them use only one palo, such as chullachaqui caspi (Remijia sp.) or sanango (Tabernaemontana sp.), in which case they are called sanangheros. There are also other shamans called maleros, who practice witchcraft to cause damage, and they can add small pieces of chambira (Astrocaryum chambira Burret), leaves of yarina (Phytelephas macrocarpa Ruiz & Pav.), toé negro (Teliostachyia sp.), and catastua (Hura crepitans L.) to the ayahuasca beverage.

The number of plants used in the preparations and mentioned by ayahuasquero and palero shamans is shown in Figure 1. The list of the plants mentioned by the shamans is presented in Table 1.

![Figure 1](image.png)

**Figure 1** – Number of plants used and mentioned by ayahuasquero and palero shamans.

Shamans either indicated that the hallucinogenic drink can cure all diseases or they did not specify this characteristic at all. As pointed by Sullivan (1988), illness is perceived by indigenous people as caused by forces that cannot be fought with the conventional remedy proposed by Western medicine. The hallucinogenic drink provides access to the information that suggests the correct cure, and therefore the power of the drink is universal and all diseases can virtually be cured.

Ayahuasqueros confirmed that B. caapi and P. viridis are the two key components used in the ayahuasca drink, but also that the effect of the drink changes if other plants are used. Don José, for example, said that if ayahuasca has no strength, toé and sanango can be added. Nevertheless, the plant knowledge of ayahuasqueros is limited when compared with that of the paleros. Luna (1984b) said that “a poor little ayahuasquero would be at the mercy of anyone knowing more than him.” Don Humberto, who is a palero, has a broader knowledge and experience than the ayahuasqueros, as indicated by the long list of plants that he uses and the knowledge of their healing power, such as for drug addiction. He also indicated that, in addition to bark, other plant parts (leaf and root) are also used for healing. The UNAP academic said that a preliminary chemical investigation indicated the presence of alkaloids in brebaje palo, although the lack of adequate instrumentation prevented further studies.

Ayahuasca is mainly prepared with B. caapi and P. viridis, which can be found in the forest and in the outskirts of the city, respectively. Due to the large demand for the first plant (about 300 leaves are required to prepare between half liter and three quarter liter of drink) there is a tendency to transplant it close to the city for easy access, while it is not easy to transplant the second one, which is a vine.

Don Humberto said that he collects plant material (from 10 to 12 different types of bark) from the forest to prepare brebaje palo. Because the ayahuasca beverage requires a minimum of two plants, even if other ones can be added to enhance the strength of the drink, it would be
Table 1 – List of the plants mentioned by the shamans interviewed, presented by their vernacular names and correspondent cross-reference with botanical name.

<table>
<thead>
<tr>
<th>Vernacular name</th>
<th>Scientific name</th>
<th>Family</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achiote</td>
<td>Bixa orellana L.</td>
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<td>Ajos kiro</td>
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<td>Lecythidaceae</td>
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<tr>
<td>Azucarhuajo</td>
<td>Hymenaea sp.</td>
<td>Fabaceae</td>
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<td>Bubinzana</td>
<td>Calliandra sp.</td>
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<tr>
<td>Capirona negra</td>
<td>Capirona decorticans Spruce</td>
<td>Rubiaceae</td>
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<tr>
<td>Catahua</td>
<td>Hura creptans L.</td>
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<td>Chacruna</td>
<td>Psychotria viridis Ruiz &amp; Pav.</td>
<td>Rubiaceae</td>
<td>1/2/3</td>
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<td>Chambira</td>
<td>Astro Caryum chambira Burret</td>
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<td>Charapilla</td>
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<tr>
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<td>Remija DC.</td>
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<td>Brunfelsia sp.</td>
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<td>Cocobolo</td>
<td>Dalbergia sp.</td>
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<td>Swartzia sp.</td>
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<td>Caryodendron sp.</td>
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<td>Pucaquiro</td>
<td>Simira sp.</td>
<td>Rubiaceae</td>
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<td>Aspidosperma sp.</td>
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<tr>
<td>Sacha culantro</td>
<td>Eringium sp.</td>
<td>Apiaceae</td>
<td>4</td>
<td>No</td>
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</tr>
<tr>
<td>Sanango</td>
<td>Tabernaemontana sp.</td>
<td>Apocynaceae</td>
<td>3</td>
<td>4</td>
<td>Yes</td>
</tr>
<tr>
<td>Tahuarí amarillo</td>
<td>Tabebuia sp.</td>
<td>Bignonaceae</td>
<td>4</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Tahuarí negro</td>
<td>Tabebuia sp.</td>
<td>Bignonaceae</td>
<td>4</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Tamamuri</td>
<td>Brosimum acutifolium Sw.</td>
<td>Moraceae</td>
<td>4</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Tangarana</td>
<td>Triplaris sp.</td>
<td>Polygonaceae</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tabaco</td>
<td>Nicotiana tabacum L.</td>
<td>Solaneaceae</td>
<td>3/4</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Toé blanco</td>
<td>Brugmansia sp.</td>
<td>Solaneaceae</td>
<td>1/2/3</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Toé negro</td>
<td>Teliostachyia sp.</td>
<td>Acanthaceae</td>
<td>2/4</td>
<td>Yes</td>
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<tr>
<td>Toronja</td>
<td>Citrus sp.</td>
<td>Rutaceae</td>
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<td>No</td>
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<tr>
<td>Tutumo</td>
<td>Crescentia cujete L.</td>
<td>Bignonaceae</td>
<td>4</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Yarina</td>
<td>Phytelephas macrocarpa Ruiz &amp; Pav.</td>
<td>Areceaceae</td>
<td>4</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**A** - used by shaman; **B** - named by shaman; **C** - named (Yes/No) by Ott (1994) for *ayahuasca*;
Shaman #1 - Don Erasmo; Shaman #2 - Don Cristobal; Shaman #3 - Don José; Shaman #4 - Don Humberto.
theoretically easier to collect plant material for ayahuasca than for brebaje palo.

Iquitos shamans said that they do not have a private garden, but acquire plant material from outside sources (only Don Erasmo said that he personally goes to the forest to collect plant material). Therefore it could be fair to say that there is no major difference in acquiring plant material for ayahuasca or brebaje palo.

Several questions might be asked when comparing the preparations of ayahuasca and brebaje palo:

a) Which of the two beverages is more efficient for cure?

Ayahuasquero Don Erasmo did not specify the diseases that can be cured by ayahuasca but he said that it had never been tested for aids. Don Cristobal did not mention which diseases can be cured either. Don José said that all diseases can be cured by ayahuasca, including drug addiction, but it has never been tested for aids patients. Two of the ayahuasqueros said that their drink cures all diseases but has not been tested for aids; however, Don Humberto said that brebaje palo cures all diseases including aids and drug addiction, and this information would give a higher score to this drink. Don Humberto, like other paleros, has more plant knowledge than ayahuasqueros. Besides, it is not brebaje palo that cures per se, but the ability Don Humberto has to interpret what his patients report after intoxication with this beverage. Due to his extensive plant knowledge it is easier for him than for an ayahuasquero to prescribe the medicinal plant to cure the patients.

b) Which of the two beverages is easier to prepare?

Ayahuasquero explained that usually a whole day is necessary to prepare the beverage, while Don Humberto did not specify the exact time. It is safe to say that at least few hours may be required to cook between 200 g and 240 g of bark (from 10 to 12 bark pieces of 20 g each).

c) Which of the preparations is more expensive?

Psychotria leaves are expensive (about US$ 30.00 per kg at the time of this research), but the ayahuasca drink needs only two plants (additional species may be optional). On the other hand, brebaje palo requires between 10 to 12 different barks, may require more time to collect them, and therefore may be more expensive. However, Don Humberto has a large number of patients coming to his office for cure. Thus if the drink preparation is expensive, on the other hand the high number of patients paying for his service would compensate the purchasing of the plant material.

d) How is the pharmacognosy of brebaje palo compared to that of ayahuasca?

It is widely accepted that the proposed synergetic mechanism between beta-carbolines harmine and harmaline of B. caapi and tryptamine of P. viridis induce hallucination. However, Schultes & Hofmann (1980) indicated that the ayahuasca drink “is still hallucinogenic even when, as often is the case, it is prepared exclusively from species of Banisteriopsis without the tryptamine rich additives”. Mabit et al. (1992) also indicated that Banisteriopsis is mainly responsible for hallucination. Nevertheless, many factors can provide different concentrations of both beta-carbolines and tryptamine in different preparations (Ott, 1994).

However, whether Psychotria or Banisteriopsis is most responsible for hallucinations, these plants are not part of brebaje palo. What is instead the pharmacognosy of brebaje palo? Don Humberto said that the beverage is prepared with a mixture of barks from 10 to 12 different species of trees that, after cooking, becomes a unique blend. It is then challenging to establish the active compounds, because cooking (high temperature) can cause chemical reactions leading to new compounds and interactions among them, which might not be generated if the plant material is not mixed. It was reported by the UNAP chemist liaison that the drink contains alkaloids and it is well known that many alkaloids have hallucinogenic activity (Schultes & Hofmann, 1980).

Don Humberto said that some paleros use one palo only. This would generate the following questions:

a) Did paleros, who use only one palo, provide the correct information to Don Humberto? And, if so, is it correct to say that a single palo species can induce psychotropic effect?
Shamans are always competitive and do not like to share secrets. Thus the information provided by Don Humberto should be carefully considered. In fact, Schultes and Hofmann (1980) indicated that “Banisteriopsis without the tryptamine-rich additives [i.e., Psychotria] can cause hallucination”.

b) Does the beverage prepared by Don Humberto, aside from provoking hallucination, have healing effects, since many plants used may also have healing properties?

The chemical activity of some compounds has already been identified for some palos, but the chemical characteristics of the blend are still unknown. Alkaloids can change molecular configuration because they are unstable compounds. This way, it is possible that the alkaloids found in the boiled barks are different from the ones contained in the raw barks; and it is also feasible that the alkaloids from individually boiled barks are different from the ones found in barks boiled together.

The beverage prepared by Don Humberto shares with the one made by Don José the use of ayahuuma (Couroupita), cumazeba (Swartzia), and remocaspi (Aspidosperma), whereas it shares with the one fixed by Don Erasmo the use of huasahi (Euterpe) and tobacco (Nicotiana). It is also possible that, if other ayahuasqueros are interviewed, the list of the plants used may increase.

If all palos mentioned by Don Humberto are compared to the plants used to prepare the ayahuasca drink (Ott, 1994), ayahuuma (Couroupita), bubinzana (Calliandra), capirona negra (Capirona), tahuari amarillo (Tabebuia), tahuari negro (Tabebuia), and charapilla (Capsicum) were already indicated by Luna (1984a), Rivier & Lindgren (1972), and Schultes & Raffauf (1990) as additives to the ayahuasca drink, although without psychotropic effect.

All the other palos, ajos kiro (Cordia sp.), almendro (Terminalia sp.), azucar huayo (Hymentaea sp.), chullachaqi caspi (Remija sp.), cocombo (Dalbergia sp.), huacapu (Minuartia sp.), huayracaspi (Brosimum sp.), itawu (Mezilaurus sp.), machimangua (Eschweilera sp.), metohuayo (Caryodendron sp.), palisangre (Brosimum guianense), pucapuquo (Simira sp.), remocaspi (Aspidosperma sp.), regua (Carapa sp.), tamamuri (Brosimum sp.), listed by Ott (1994) for the preparation of ayahuasca, do not belong to the list of the plants containing MAOI beta-carbolines, or containing tryptamines. Thus these palos could not be responsible for hallucination.

Tobacco, which is not a palo, but is in the list of the additives used in the ayahuasca preparation, could be considered for possible psychotropic effect, possibly when mixed with other ingredients, because many members of the Solanaceae family contain psychotropic compounds. Don Humberto said that tobacco is used during the ceremony to induce dizziness (mareación). Could tobacco alone be so strong as to induce complete hallucination? Or, could tobacco create these effects when in conjunction with other chemicals in the drink? Wilbert (1987) believed that the real power derives from tobacco, which Don Humberto blows off during the ceremonies. However, indole alkaloids are found in Couroupita (Bergman et al., 1977; Sen & Matsut, 1974), Aspidosperma (Mitaine et al., 1998; Pereira et al., 2007), and because indole is the skeleton of many hallucinogenic compounds, such as DMT, found in Psychotria, and highly responsible for hallucination, this characteristic could support the hypothesis that the two drinks have similar effect because they share compounds with similar characteristics. In addition, tamamuri (Brosimum sp.) has hallucinogenic activity (Grenand et al., 1987), even if not included in the list of plants used for ayahuasca preparation by Ott (1994).

Can we also establish which drink was used first? Don Humberto proved that shamans are very competitive and like to try new plants and new plant combinations. Thus it is possible that brebaje palo is a newer practice, compared to ayahuasca, and might even have originated from it, induced by the multicultural interactions in the Iquitos region. In 1851, Spruce had the first information about what was later called ayahuasca (Schultes & Hoffman, 1980), but it is not known for how long the Tukanoan tribe of the Rio Uaupes, Amazonian Brazil and Colombia, used a liana called caapi to prepare a beverage that causes intoxication.

Luna (1984b) indicated that a shaman used Triplaris surinamensis in substitution of P. viridis. Don Cristobal said that Brugmansia
sp. (toé blanco) can be used in substitution of *P. viridis*. It is well known that *Brugmansia* sp. is very powerful and Luna (1984b) stated that only two leaves of this plant are sufficient in the preparation of the *ayahuasca* mixture. The strong power of *Brugmansia* sp. (toé blanco) was also reported by Schultes and Hoffman (1980).

Can the widespread use of *ayahuasca* have an impact on the ecology of the plants that make the drink and cause scarcity in the future? *Chacruna* should be easily available in the upper land and in the low land, and so it would be difficult to anticipate ecological disruption because of that. Recently, Dobkin de Rios (2006) was deeply concerned by the “drug tourism” in the area and indicated that “*Ayahuasca* is disappearing as a sustainable plant in the Amazon, often replaced by the use of tobacco.”

**Conclusion**

The hypothesis that *brebaje palo* is as effective as *ayahuasca* could be supported by the chemical analysis of the plants used in the mixture, such as *Couroupita* and *Aspidosperma*, which contain indole alkaloids similar to DMT, highly responsible for hallucinogen activity in *ayahuasca*. The preparation of *brebaje palo* has been indicated and it is very similar to that of *ayahuasca* since plant material is boiled for both drinks. There is no major difference in collecting plant material, with the exception that *Psychotria* leaves are very expensive.

The pharmacognosy is complex and, although the synergetic mechanism was described by McKenna et al. (1984a, 1984b), *ayahuasca* is still a “mystery” McKenna et al., 1995). The same could be stated for *brebaje palo*, even if the presence of alkaloids was confirmed by the chemist liaison.

The entire study should not be separated by the context where it was done. Indigenous healers have a different perspective of health and disease that does not match Western medicine. This way, not only the information provided should be accepted under these circumstances, but sometimes it could also be in contradiction with our expectations. The information has been reported literally as it was collected, and may generate some doubt, such as the veridicality of saying that “a certain plant can cure all diseases.” The entire healing process should be understood as part of a ceremony during which the rational parameters of modern sciences might treat this with certain skepticism. However, indigenous people go to local healers because this practice “works” for them.

More questions could have been asked, but the researcher did not want to obtain fictitious answers that could have been given just to please who asked them. When Don Humberto indicated that some *paleros* use one *palo* only, he was questioned “One palo only?” and he answered “Yes.” This answer is very questionable, considering that he mixes between 10-12 different barks. Shamans can be very secretive and might provide misleading answers to protect their knowledge. Other shamans were interviewed, also with the support of native assistants, in the surroundings of Iquitos, in the higher localities, and in a village along the Amazon River. In these localities it could be observed that sometimes, when the same questions were repeated at different intervals, the answers were not complete and satisfactory; therefore, the questions were dropped.

Major guidelines were indicated at the National Aboriginal Health Organization (NAHO) on *Traditional medicine in contemporary contexts*, by Hill (2003) to protect and respect indigenous knowledge and medicine.

Relevant to Peru, Greene (2004) presented an extensive report on the Aguaruna International Cooperative Biodiversity Groups (ICBG) that offers ground to open discussion on intellectual property rights. The Co-Ordinating Body for Indigenous Organization of the Amazon Basin (COICA), after the patent (no. PP5751) for *B. caapi* was granted to Miller, called the recipient “enemy of indigenous people” (Roopnaraine, 1998). These actions, rightly motivated, put research projects in connection with a number of complex issues. For example, in order to further the study on the *brebaje palo*, phytochemical analysis should be recommended, but the Aguaruna ICBG event could prevent permit for this type of study. It is possible to have permission for plant collection, but not for their analysis.
The recent concern of Dobkin de Rios (2006) about ayahuasca sustainability should be seriously addressed. An average of 300 leaves of *P. viridis* is needed to prepare the beverage. A detail study on the sustainable extractivism of ayahuasca ingredients could clarify the risk and threats to these species as well as to their natural environment. A study in this direction might also help to understand the impact of alternative preparations, such as the brebaje palo.

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