

# Exploring ayahuasca as a cure for addiction



Ayahuasca is a South American concoction of various vines and plants. It has been used by natives for thousands of years as a method of obtaining contact with the spirit world. In the last few decades it has gathered some notoriety as a possible cure for addictions and other mental illnesses. This paper seeks to provide a brief overview of the history of the brew, it's ritualistic uses, it's pharmacology and it's use in the treatment of addiction.

## History

Originating in the countries straddling the Northwestern portion of the Amazon Rain Forest in South America ayahuasca is a mixture of several different plants steeped together in water to form a sort of tea. (Nunes et al, 216) Natives of these countries, primarily Peru, Colombia, Ecuador and Brazil, have been using the drinking ayahuasca for at least 4, 000 years. (Liester & Prickett, 2012) The term " ayahuasca" derives from the Quechua language and the Quechua people who are broadly spread across much of the Amazon basin. (Liester & Prickett, 22012). In the Quechua language " aya" means " dead person, spirit, soul or ancestor" and " huasca" means " rope or vine". (Liester & Prickett, 2012) Taken together " ayahuasca" means " vine of the soul" or " vine of the dead" (Liester & Prickett, 2012.) Ayahuasca has been used for millenia by Quechuan " curanderos" (healers) in various shamanic and ritualistic healing ceremonies. (Kavensk & Simonova, 2015). In the early 20<sup>th</sup> century various churches, primarily in Brazil, incorporated ayahuasca into a syncretic blend of Christian, Spiritist and Afro-descendant religious practices (Talin & Sanabria, 2017). Once incorporated into these churches the concoction began to slowly seep out of South America and into the consciousness of the world at large.

## Pharmacology

Ayahuasca is an herbal tea consisting of different plants depending upon the region and the curandero's education regarding the preparation of the concoction. Although there are striking differences in the plants used as one moves about the wide expanse of the Northwestern Amazonian rainforest the main ingredients appear to be mainly uniform. These ingredients consist of the native *Banisteriopsis caapi* vine and the *Psychotria viridis* shrub.

(Nunes et al, 2016)

*Banisteriopsis caapi* is a South American jungle vine of the Malpighiaceae family (Lanaro et al, 2015). In the Quechua language it is known as *chacruna* (Talin & Sanabria, 2017). “ The plant contains beta-carboline alkaloids including harmine, harmaline, and tetrahydroharmine that serve as potent monoamine oxidase inhibitors (MAOI's) (Nunes et al, 2016). MAOI's are widely known and used to treat such illnesses as Parkinson's Disease or depression by blocking the activity of monoamine oxidase enzymes. These molecules, such as dopamine, norepinephrine, epinephrine, serotonin, melatonin, DMT and various histamines, operate as potent neurotransmitters in the brain (Talin & Sanabria, 2017). Generally, when ingested monoamines are broken down by monoamine oxidase enzymes during the digestion process thereby mitigating their effects on the body as a whole. With the introduction of MAOI's, like those found in *Banisteriopsis caapi* , these monoamines are not metabolized into simpler compounds. Thus, the body experiences something closer to the full effect of the neurotransmitters.

*Psychotria viridis* is a shrub from the coffee family (Talin & Sanabria, 2017). The leaves of the plant contain a plethora of alkaloids with N, N-dimethyltryptamine (DMT) being the predominant psychoactive constituent (dos Santos et al, 2012). DMT is a naturally occurring alkaloid found throughout the plant and animal kingdoms. It is a short acting psychotropic that can produce radically altered states of consciousness when ingested properly (smoked, snorted or, as will be seen, in a proper herbal decoction) (dos Santos et al, 2012). DMT is structurally similar to serotonin. As such it shows an affinity for serotonergic receptors with agonist actions documented at the 5-HT<sub>2a</sub> and 5-HT<sub>2c</sub> sites (Talin & Sanabria, 2017). When ingested orally DMT is rapidly broken down by monoamine oxidase in the gastrointestinal tract. With the addition of the MAOI's found in *Banisteriopsis caapi* the DMT remains active and becomes a potent psychoactive drug causing the hallucinations and out of body experiences for which ayahuasca is well known.

### Physiologic Effects

The physiological effects of ayahuasca typically last 6 to 12 hours (Talin & Sanabria, 2017). The users experience hallucinations, aural and visual, but seem to retain lucidity and clarity of thought (Talin & Sanabria, 2017). In the initial phases of intoxication, the effects on the intestinal tract include vomiting and diarrhea (Nunes et al, 2016). Indeed vomiting is considered a fundamental part of the ayahuasca experience (Horak, Hasikova & Verter, 2018). Neurologic effects include tremors, dizziness, synesthesia and tingling sensations (Talin & Sanabria, 2017). Drinkers experience increased heart

rates, blood pressure and various metabolic changes in perception of body temperature and skin sensitivity (dos Santos et al, 21).

### Psychological Effects

Ayahuasca drinkers frequently report alterations in perceptions, emotions and thinking (Nunes et al, 2016). Although loss of consciousness is not typical profound alterations in consciousness are the norm. Drinkers typically report visual hallucinations, usually of common jungle animals such as jaguars and snakes, and geometric patterns (Talin & Sanabria, 2017).

Auditory hallucinations are common as well. These typically take the form of flowing water, rainfall, people singing or people speaking (Talin & Sanabria, 2017). The cumulative effects of these physiological and psychological changes combine to invoke powerful spiritual effects on the drinkers elevating them to a higher awareness of themselves and their experience with the universe.

Although the “ intensity of effects produced by ayahuasca is not directly proportional to it’s therapeutic effect” this does not dampen the desire for the experience on the part ceremony participants (Horak et al, 2018, p. 4). The spiritual, consciousness altering aspect of ayahuasca is the prize for suffering through the physiological effects of the ingestion of the mixture. This payoff comes in the form of visions of supernatural realms, sensations of time being altered (going backwards or forwards in time), communication with deities or long-lost loved ones, the gaining of intuitive insights about oneself, the sensation of flying or traveling places in the spirit etc. (Talin & Sanabria, 2017). These sensations combine to invoke powerful, life-changing

effects in many of the users. The claimed effects of ingesting ayahuasca are legion, however, a major claimed benefit is the cure of addiction.

### Addiction Treatment

Addiction is a multi-faceted, spread-spectrum phenomenon in which biochemical, physiological and psychological factors seem to all play a role (Talin & Sanabria, 2017). Accordingly, it appears that ayahuasca, alone, cannot be understood as a pharmacological phenomenon. Ayahuasca may be better understood as a “therapeutic catalyst” (Loizaga-Velder & Verres, 2014). As a therapeutic catalyst the value of ayahuasca is potentiated by the participation of the shaman or guide who has been prepared to aid in the administration of the drug and guiding of the “trip”. Drinking ayahuasca, then, in this conception is not simply the ingestion of a drug with corresponding therapeutic effects and side effects emerging from the other side. The drinking of ayahuasca is inextricably linked to the guided aspect of the experience combined with the setting and the other participants in the ceremony. Ayahuasca is, therefore, greater than the sum of its pharmacological effects.

Although ayahuasca is a phenomenon of the Amazon it has been widely spread around the world. The notion it is effective in the treatment of addiction has caught the eye of sufferers and researchers alike. Ayahuasca has been perceived, in places as far-flung as the Czech Republic, as beneficial. In 2015 study Czech researchers found those who had participated in ayahuasca ceremonies reported such benefits as, deeper self-knowledge, self-acceptance, inner serenity, responsibility for one’s self, the

development of spirituality and, importantly, the overcoming of psychological problems (Kavenska & Simonova, 2015). These insights seem to persist over time and are perceived to have been worth the time, money and effort expended in traveling to obtain them.

### Sample Treatment Methodology

Various studies have looked at the use of ayahuasca in the treatment of addiction (Bouso et al, 2012). The treatment methodology typically follows a similar pattern. This pattern can be understood to consist of ayahuasca tea ingested during a religious or spiritual process. A recent study originating in Brazil (Cruz & Nappo, 2018) outlines the process in elaborate detail.

Although the Brazilian context is one of a more religious nature, coming as it does from one of the syncretic, ayahuasca using churches dating from the early 20<sup>th</sup> century, it follows a pattern similar to those found in the rainforest and of a more spiritual rather than religious nature. A quick look at the study and this pattern is instructive.

Cruz & Nappo approached the Santo Daime religious community to study the effects of ayahuasca ceremonies on the treatment of crack cocaine addiction in the Brazilian community. Crack use is rampant throughout Brazil. The addicts seeking treatment reported the typical reasons for wanting to stop, i. e., loss of family, friends, finances, poor health, etc. The “treatment” employed by the church, as documented by Cruz & Nappo, was as follows:

First, the ayahuasca tea was prepared and ingested. Participants reported the appearance of various types of hallucinations. These could be long or short in duration, euphoric or frightening with sharp or blurry contours. The

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differences in visions seemed to be related to the psychological state of each participant. Second, the religious service. The effects of the tea are modulated by the type of religious service surrounding the drinking of the tea. In the instant study, the participants tended to experience hallucinations consistent with the iconography of the Catholic church side by side with the various Afro-Brazilian entities that have been incorporated into the worship services of the Church of Santo Daime. Third, the ayahuasca community. The participants tended to view the religious community in which the ceremony takes place as a place loaded with positive energy, friendship and respect. These welcoming aspects created an atmosphere favorable to introspection and reflection. Finally, at the end of the ceremony the whole community gathered with the participants to celebrate the work done and share life experiences with them in a fraternal atmosphere.

Cruz and Nappo found the ayahuasca “cure” to consist of the user experiencing the activation of “levels of consciousness by amplifying perceptions and thus allowing the ‘truth’ about the user’s (past and future) life to present itself to the user through revealing visions.” The relapse rate was relatively small with detachment from the ayahuasca community listed as a main contributor to a return to crack use. This indicates the community aspect of the experience may be as important as the hallucinogenic aspect itself.

The experiences in the Church of Santo Daime for the crack users is representative of the ayahuasca experience. More spiritual, as opposed to religious, experiences are found in the Amazon where the ceremony is not held in a church environment. Although more animistic or naturalistic the

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process is guided by shamans in a community of users who believe in the efficacy and of ayahuasca and the subjective reality of user experiences. To the extent individuals have negative experiences (bad trips) when using ayahuasca the culprit is usually reported as “ bad energy in the community” or a negative perception of the shaman leading the ceremony. Indeed, “... some curanderos use their shamanic skills for the purpose healing as well as for harming people (so-called brujos) (Kavenska, 2015, p. 352). The introduction of the profit motive also increases the potential for charlatans or untrained self-ordained guides to set up shop willing to swindle the gullible with practices that can be dangerous.

### Efficacy

As noted, it is difficult to separate the effects of the ayahuasca decoction itself from the broader effects of its consumption in a strong, supportive community and under the guidance of experienced curanderos or mental health professionals (Hamill, Hallak, Dursun, & Baker 2018). Testing of long-term ayahuasca use by indigenous peoples in the mid-1990's did not show a negative effect on neuropsychological function(Grob et al, 1996). In tests using a control long-term users were compared on a number of psychological measures (the Symptom Check-List-90-Revised, the Stroop Color and Word Test, the Wisconsin Card sorting test, Purpose in Life Test, Spiritual Orientation Test and Psychosocial Well-Being Test) (Bouso et al, 2012). It was found ayahuasca users scored lower on psychopathology measures and performed better on cognitive and life performance tests than the control group (Bouso et al, 2012). Dr. Jacques Mabit operates an addiction clinic in Peru and uses ayahuasca as a part of the treatment (Hamil et al, 2018).

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Mabit reports significant positive effects and "...that ayahuasca increases intellectual capacity and concentration, reduces anxiety, increases tolerance of frustration, improves self-esteem, facilitates individuation processes, and allows users to see beyond their own worldview and increases openness to new experiences (Hamill et al, 2018, p. 5)."

Ayahuasca appears to be beneficial in addiction treatment and, when used appropriately, does not seem to carry risks of abuse (Hamill et al, 2018).

How ayahuasca achieves this efficacy, as has been noted, is not well understood although 4 major hypotheses have been put forward as possible explanations.

1. Ayahuasca reduces brain dopamine levels or activity in the mesolimbic dopamine pathway, decreasing the reward associated with an addictive substance.
2. Reduced dopamine in reward pathways impairs the synaptic plasticity involved in addiction development and maintenance.
3. The introspection, self-realizations, and healing of past traumas afforded by an ayahuasca experience offer better understanding of consequences and improved decision-making, empowering the individual to abstain.
4. Ayahuasca facilitates transcendent experiences, such as that experienced by Bill Wilson, co-founder of Alcoholics Anonymous, while hospitalized with near fatal alcoholism, with said transcendent experiences supportive of being able to give up a given addiction.  
(Hamill et al, 2018, p. 13)

Some combination of these 4 explanations combined with a supportive community and the right mindset would seem to explain the efficacy of the ayahuasca experience.

## Conclusion

Ayahuasca is an old, old concoction that has storied past in the Amazon. It has been used for thousands of years, primarily, to communicate with the spirit world and as a means of healing by the indigenous peoples in the Northwestern area of the Amazon river basin. Since the early 20<sup>th</sup> century the use of ayahuasca, first in religious services, and later as a means of healing such psychological problems as drug and alcohol addiction, has percolated out of the Amazon and into the consciousness of people across the globe. Testing in the treatment of addictions has indicated some efficacy, however, the personality type of the participant, the actions of the drug in the participant's body and the role of a supportive community of users and guides work to confound answers as to what makes ayahuasca effective. Although it is unclear why ayahuasca works it is clear it does work for some individuals. For that reason, more testing, in controlled conditions, is indicated.

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