

## Ayahuasca: Friend or Foe?

Gerard I. Fernando, M.D.

Ayahuasca is an entheogenic brew that is used as a medicinal sacrament and for ritualistic purposes among religious groups in South America. In the last decade, people from all walks of life, usually in their 20s and 30s, from North America and Europe have started to seek access to the substance. Many have traveled to South America, notably Brazil and Peru, to participate in the ayahuasca ritual.

Once consumed, it induces hallucinations and spiritual experiences that are thought to be due to increased introspection. Effects begin about 30 minutes after consumption and can last up to 8 hours. Ayahuasca can contain the *Banisteriopsis caapi* vine alone, which contains monoamine oxidase A (MAO-A)-inhibiting beta-carbolines, but is often combined with *Chacruna* (*Psychotria viridis*) or *Chagropanga* leaves, which have high concentrations of the psychedelic compound N, N-dimethyltryptamine (DMT) (1). Alone, DMT is made inactive by intestinal MAO-A metabolism; therefore, it is combined with a monoamine oxidase inhibitor to allow absorption of the active substance. Once it crosses the blood-brain barrier, DMT acts as a 5-HT<sub>1A/2A/2C</sub> agonist and a mGluR2 agonist. There is increased blood flow to the frontal and paralimbic brain areas after ingestion, specifically bilateral activation of the anterior insula/inferior frontal gyrus, anterior cingulate/medial frontal gyrus in the right hemisphere, and amygdala/parahippocampal gyrus in the left hemisphere (2). These areas have previously been implicated in somatic awareness and emotional arousal. Compared with the better studied psychedelic lysergic acid diethylamide (LSD), the experience

Our patients may  
become interested in  
ingesting ayahuasca in  
hopes of treating their  
psychiatric conditions.

with ayahuasca is described as more intense, with people sometimes losing touch with their physical surroundings. Ayahuasca also causes vomiting (unlike LSD), which is considered to be an important part of the ritual.

An explanation for the increase in popularity may be due to a recent spike in media coverage of ayahuasca. Celebrities—from the singer Sting to the actress Lindsay Lohan—along with major media outlets, such as the *New York Times* and *Huffington Post*, are singing the praises of ayahuasca, which may be contributing to the increase in its use and perceived safety. Furthermore, ayahuasca may show promise in the treatment of several psychiatric disorders. Studies have shown its effectiveness in treating depression (3) and addiction (4) in humans, although these were observational and limited in significance. In a CNN documentary hosted by journalist Lisa Ling, increasing use of the psychedelic in veteran populations was exposed. Ling followed veterans to South America, where they ingested ayahuasca in hopes of treating their PTSD symptoms. While popular culture has supported its expanding use, it can lead to significant medical complications, such as serotonin syndrome and death. An increasing number of deaths after

intoxication have been reported and suspected to be the result of serotonin syndrome, as many of the affected individuals were medicated with selective serotonin reuptake inhibitors prior to taking ayahuasca (5).

Due to an explosion of media coverage, our patients may become interested in ingesting ayahuasca in hopes of treating their psychiatric conditions. Warning them of the possible dangers, particularly serotonin syndrome, could potentially save their lives.

Dr. Fernando is a fourth-year resident at Harvard South Shore, VA Boston Health-care System, Psychiatry, Brockton, Mass.

The author thanks Shalini Rao, Dilantha and Pushpini Fernando for their help in reviewing this commentary. The author also thanks Andrew Szanton for advising on this commentary.

### REFERENCES

1. Pinkley H: Plant admixtures to ayahuasca, the South American hallucinogenic drink. *Lloydia* 1969; 32:305–314
2. Riba J, Sergio R, Eva G, et al: Increased frontal and paralimbic activation following ayahuasca, the pan-Amazonian inebriant. *Psychopharmacology* 2006; 186:93–98
3. Osório FD, Sanches RF, Macedo LR, et al: Antidepressant effects of a single dose of ayahuasca in patients with recurrent depression: a preliminary report. *Revista Brasileira de Psiquiatria* 2015; 37:13–20
4. Thomas G, Lucas P, Capler NR, et al: Ayahuasca-assisted therapy for addiction: results from a preliminary observational study in Canada. *Curr Drug Abuse Rev* 2013; 6:30–42
5. Callaway JC, Grob CS: Ayahuasca preparations and serotonin reuptake inhibitors: a potential combination for severe adverse interactions. *J Psychoactive Drugs* 1998; 30:367–369