THE HOASCA PROJECT: PROPOSAL FOR A BIOMEDICAL INVESTIGATION OF AYAHUASCA

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AYAHUASCA is a Quechua term meaning "vine of the souls," and is one of the numerous indigenous names for the hallucinogenic drink prepared from a combination of two Amazonian plants, *Banisteriopsis caapi*, and *Psychotria viridis*. In Amazonian Peru and parts of Colombia and Ecuador, the drink is known as ayahuasca; in other parts of the Amazon, it is known as yage, natema, or pildé; in Brasil, it is known as hoasca, or sometimes simply "the tea." In whatever cultural context it is found, and by whatever name, ayahuasca plays a pivotal role both in the spiritual life of the populations that use it, and in local ethnomedical practices. The drink is regarded as both a sacrament, and a medicine. For the shamans familiar with its properties, it is both a diagnostic aid and a respected teacher; for the patients who seek the healing the shamans can offer, it is the ideal holistic medicine, providing the means to cleanse and heal both the mind and the body. From the perspective of modern psychopharmacology, practically nothing is known of how it actually effects the human mind/body.

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Recently, a unique opportunity has become available to carry out a biomedical investigation of the immediate and long-term effects of ayahuasca in human users. This opportunity has resulted from recent friendships established by the author, Dennis McKenna, with members of a Brasilian organization, the União do Vegetal (UDV) which is essentially a syncretic religious movement in which the collective, periodic ingestion of hoasca tea is the central ceremony and sacrament. Unlike the more traditional use of ayahuasca in the context of mestizo or aboriginal shamanism, the use of hoasca tea within the UDV is strictly regarded as a religious or spiritual practice (as opposed to a curing or medical practice). Moreover, many of the younger adherents to the UDV "cult" tend to be well-educated, urban professionals. Some of the members are Western-trained physicians, psychiatrists, or other health professionals, who frequently possess a solid training in medical disciplines and a healthy scientific curiousity about the physical and psychological effects of hoasca tea. They understand as much as anyone does about the active alkaloids found in hoasca tea, and about its putative mechanism of action. They would like to learn all that can be learned about how it works, but at the same time they maintain a sense of reverence regarding their sacrament; they consider that an effort to understand hoasca using the tools and paradigms of science is not a sacrilege, if it is pursued as part of a sincere effort to increase our knowledge of this remarkable medicine.

This enlightened attitude establishes an intellectual climate in which a pharmacological and psychological investigation of hoasca could be carried out, if the required resources were available. While attending a conference on the biomedical aspects of hoasca which was hosted by the UDV in São Paulo in June, 1991, I made a proposal for a biomedical investigation of the human pharmacology of hoasca to some of the leaders of the UDV. The response was more than receptive; it was enthusiastic. Since this conference, we have remained in frequent contact, and have continued to work together on developing a proposal setting forth the objectives and methodologies for a pilot study on the action of hoasca in humans.

As currently conceived, a number of parameters related to the psychophysiological effects of hoasca will be investigated, among them the following:

• Composition of hoasca teas. The UDV recognizes several kinds of hoasca, which differ in their modes of preparation and in their effects. The composition and amount of active alkaloids in these various types of tea will be analyzed and compared.

• Acute pharmacokinetics of hoasca. Pharmacokinetics is the study of the absorbtion, metabolism, and excretion of drugs. The pharmacokinetics of the major alkaloids of hoasca (harmine and DMT) will be determined in blood samples taken from volunteers using a technique known as gas chromatography/mass spectrometry (GC/MS).

• Acute/long-term effects of hoasca on serotonergic functions. Hoasca, like other halluci-

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fore the interruption of cocaine self-administration with a non-toxic substance was unheard of. In a number of widely-reported studies, animals, when given the ability to self-administer cocaine did so continuously, ignoring food, water, and sex, until they died. Secondly, Dzolic's findings are consistent with those of S.D. Glick, et. al., *Effects and Aftereffects of Ibogaine on Morphine Self-Administration in Rats.* (European Journal of Pharmacology, 195: 341-345, 1991).

Glick found that not only would ibogaine interrupt morphine self-administration, but that it continued to do so long after the ibogaine was eliminated from the body. Citing two US patents (4,499,096; and 4,587,243) which describe the potential efficacy of ibogaine in treating opiate and cocaine addiction, Glick concludes, "Though far from addressing the full extent of the claims presented in the patents, the results of this study suggest that such claims should be taken seriously, and that further investigation is warranted."

In a study entitled, *Interactions between Ibogaine, a Potential Anti-Addictive Agent, and Morphine: An In Vivo Microdialysis Study* (European Journal of Pharmacology, 199:35-42, 1991) L M. Maisonneuve et. al. found that "It appears that ibogaine affects brain DA systems for a period of time that exceeds its elimination from the body, and during this time, alters t` he responses of these systems to morphine. by preventing the increase in dopaminergic transmission induced by morphine in the nucleus accumbens, ibogaine may decrease the reinforcing efficacy of morphine. Thus, although a definitive mechanism underlying the claims regarding ibogaine's therapeutic effects cannot be specified yet, the results of the present study indicate that such mechanisms merit investigation."

Maisonneuve and Glick published two other papers addressing the dopamine question, Interactions between *Ibogaine and Cocaine in Rats: An In Vivo Microdialysis and Motor Behavior* (European Journal of Pharmacology, 212:263-266, 1992); and *Acute and Prolonged Effects of Ibogaine on Brain Dopamine Metabolism and Morphine-Induced Locomotor Activity* (Brain Research, 575, 69-73, 1992).

Glick then turned his attention to another claim; that ibogaine will suppress the multiple symptoms of narcotic withdrawal. The claim that ibogaine attenuated many, but not all, symptoms of withdrawal was first reported by Djolic et. al., *Effect of Ibogaine on Naloxone-Precipitated Withdrawal of Chronic Morphine Dependent Rats* (Arch-ive of International Pharmacodynamics, 294, 64-70. 1988). Two years later, Aceto, Bowman and Harris at the Medical College of Virginia reported that ibogaine suppressed withdrawal signs in morphine dependent monkeys (NIDA Research Monograph 95; 578, 1990). A controversy was created when Sharpe and Jaffe refuted those findings, stating that ibogaine failed to reduce the majority of withdrawal signs in nal-oxone precipitated withdrawal in morphine dependent rats (NeuroReport 1, 5-7, 1990). However, Sharpe and Jaffe conceded that such discrepancies were possibly the result of methodological differences. "Despite all these differences," observed Glick, "some aspect of the opiate withdrawal symptom was ameliorated in all three studies."

Glick prepared a study to re-examine the possibility that ibogaine might attenuate morphine withdrawal. His results indicate that ibogaine significantly decreased the intensity of many withdrawal signs (*Effects of Ibogaine on Acute Signs of Morphine Withdrawal in Rats: Independence from Tremor*, Neuro-pharmacology, Vol. 31, No. 5, p. 497-500, 1992). "Exactly how ibogaine might attenuate opiate withdrawal is, at this point, open to conjecture," Glick states. "Regardless of the explanation," he concludes, "the present results indicate that the potential usefulness of ibogaine in treating acute manifestations of opiod dependence should be further investigated." ■

Editor's note: Howard Lotsof is trying to develop ibogaine through the use of a for-profit corporation, the opposite approach of MAPS to MDMA. For more information, contact Howard Lotsof, NDA International, 46 Oxford Place, Statten Island, NY, 10301. (718) 442-2754