

# The Internationalization of Ayahuasca

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and  
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## *Dedicated to Rolf Verres*

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# An Epidemiological Surveillance System by the UDV: Mental Health Recommendations Concerning the Religious Use of Hoasca

*Francisco Assis de Sousa Lima and Luís Fernando Tófoli*

This chapter aims to report the observations and results obtained through a surveillance program, called Psychiatric Monitoring System of Hoasca Users (*Sistema de Monitoramento Psiquiátrico em Usuários do Chá Hoasca*), in its first thirteen years of existence (from 1994 up to 2007). The system was established by the Medical-Scientific Department (*Departamento Médico-Científico*, DEMEC) of the Centro Espírita Beneficente União do Vegetal (CEBUDV or UDV). The objectives of this system are the early detection and diagnostic elucidation of psychiatric occurrences within UDV members, the investigation of possible relationships with hoasca<sup>1</sup> ingestion, and the providing of consultation regarding individual management and treatment in each case.

We present in this chapter a summary of the data obtained by the Monitoring System, emphasizing notifications that involved clinical aspects of mental disorders, and discussing aspects related to the safety of hoasca use in a religious setting, within the UDV's institutional context of care and orientation.

This work's first draft was presented as a poster presentation in the XVI Brazilian Congress of Psychiatry in 1998 (Lima, Naves, Migueli, Motta & Brito, 2002). Starting from the premise that individual susceptibility to psychosis is an important causal factor in psychotic episodes, this pilot study demonstrated the importance of evaluation prior to an individual drinking hoasca for the first time, as well as the importance of monitoring for possible subsequent occurrences.

Also important are potential pharmacological interactions. One of hoasca's components, as shown below, contains  $\beta$ -carbolines, also called harmala alkaloids, which contain monoamine-oxidase A (MAO-A) inhibiting properties. Considering the increasing use of antidepressants in the general population<sup>2</sup> and, consequently, by people who drink or are interested in drinking hoasca, some recommendations were developed to provide a margin of safety and to prevent potential adverse effects, taking into consideration the theoretical risk resulting from the combination of ayahuasca and serotonin reuptake inhibitor drugs (Callaway & Grob, 1998).

## **Hoasca and Mental Health in the History of the União do Vegetal**

The UDV was established on July 22, 1961 by rubber tapper José Gabriel da Costa (1922-1971) — *Mestre* (Master) Gabriel — and was registered as a beneficent association on January 6<sup>th</sup>, 1968, in Porto Velho. In 1991, the UDV had around 3,000 members (CEBUDV, 1999). In 2008 the UDV was estimated to have around 13,000 individuals, with a slight male preponderance (52,5%) among adult members (CE-

BUDV 2008; for more information on different aspects of the UDV see also Lodi, Bronfman, & Prades, in this volume). The population growth within the UDV has been 9% per year within this 17-year period. Since its beginning, the institution has expanded to an urban population contingent, reaching a diversified and relatively differentiated profile in terms of professional and educational status (CEBUDV, 2001a, 2003, 2008). At the same time, it strives to preserve its mestizo roots.

In 1985, a government document issued by the Brazilian Ministry of Health included *Banisteriopsis caapi* in the list of proscribed substances in the country. At that time, UDV temporarily suspended hoasca distribution in all its Administrative Units (UDV temples) for two months, and asked the Federal Narcotics Council for a review on the subject. The exclusion of hoasca from these lists was issued temporarily in the following year and as a definitive decision in 1992. In 2004 the religious use of ayahuasca was recognized as legitimate in Brazil according to a resolution of the Brazilian National Anti-Drug Council (CONAD, 2004).

In 1986 the UDV created the Center of Medical Studies – the current Medical-Scientific Department (DEMEC) – with the purposes of eliciting a dialogue with academic institutions, facilitating biomedical research within the UDV, and providing internal assistance and information about the use of hoasca to authorities from the governmental, legal, and academic domains. Until recently, DEMEC had within its structure a Clinical Commission, a Mental Health Commission composed of doctors and psychologists, and a Scientific Commission. The latter now functions in a more independent manner, being directly connected to the UDV's General Directorate (its central administrative office). The former two commissions continue to be active, with coordinators overseen by the director of DEMEC. It is important to clarify that, in clinical cases of any nature within the UDV, the technical support given by both the Mental Health Commission and the Clinical Commission is directed only to evaluation and management within the UDV, and *not* to providing medical treatment. Also within DEMEC is a network composed of monitors from all the administrative units and coordinators from all the UDV's regions. This network communicates through internet discussion forums, which allow for integrated action throughout the UDV in Brazil, Europe, and the United States.

The UDV has opened its doors to scientific research, with an emphasis on the study of the human pharmacology of hoasca, seeking to demonstrate to those outside the institution the safety of hoasca's ritual use. In its first National Congress on Health, which took place in 1991, the UDV offered to a team of national and international researchers the proposal of a comprehensive biomedical study of hoasca. The research project was designed to investigate the safety of hoasca use in UDV rituals and its action in the central nervous system, seeking to know if it would cause any type of physical or mental damage, and clarifying issues about pharmacodynamics and pharmacokinetics. This plan became the "Hoasca Project," initiated in 1993, involving over thirty researchers from nine institutions, with Charles Grob as the principal investigator and with the logistical coordination of Glacus de Souza Brito, then Director of DEMEC (CEBUDV, 2001b).

In the two other subsequent UDV Congresses in 1993 and 1995, the preliminary results and the study conclusions, respectively, were publicized. The results demonstrated the first evidence for the safety of ayahuasca use. Among other things it also

showed a positive association between the participation in this religion and recovery from abuse or dependence on alcohol and other substances (Grob et al., 1996).

More recently, the UDV was involved in another scientific study. This was also an international, collaborative, multi-center study that took place during the first years of the 21<sup>st</sup> century. The physical, mental and neuropsychological health of adolescents from the UDV that had a history of regular consumption of hoasca was compared with adolescents without a history of ayahuasca intake. Once again, the results pointed out that hoasca use was associated with a smaller number of common mental symptoms, decreased use of recreational drugs, more positive attitudes towards life, and greater respect for family ties (da Silveira et al., 2005; Dobkin de Rios et al., 2005; Doering-Silveira et al., 2005b).

The Multidisciplinary Working Group on Ayahuasca, organized under the aegis of Brazil's National Anti-Drug Council (CONAD), composed by researchers and representatives of ayahuasca religions, states in its final report that it is the responsibility of the religious entities to exert "rigorous control over the system of the introduction of new members, being necessary to perform an interview with those interested in the ingestion of ayahuasca, to ensure that it is not given to people with a history of mental disorders, or to people under the effect of alcohol or other psychoactive substances"<sup>3</sup> (CONAD, 2006).

The UDV, through the Mental Health Commission of DEMEC, established in 1994 a system of epidemiological surveillance for its affiliates. The members of this commission, including the authors, along with other physicians, psychiatrists, psychotherapists, and psychologists, perform voluntary, non-remunerated work, providing technical and institutional consultation. In this respect it is important to mention that an approach of care and caution towards the newly-arrived members has been maintained and recommended in the UDV since its origins. Mestre Gabriel affirmed hoasca's safety at the same time that he called attention to the necessity to avoid the administration of hoasca to people that had, according to his words, "weak memory" (*memória fraca*) or "worn-out memory"<sup>4</sup> (*memória "estrompada"*), being therefore vulnerable and thus susceptible to present mental disorders. DEMEC and its mental health guidelines were created based on this orientation from Mestre Gabriel, in the face of later inquiries by the medical and legal authorities.

## Pharmacological Factors and Health Issues Related to Ayahuasca

According to McKenna (2004), ayahuasca

is unique in that its pharmacological activity is dependent on a synergistic interaction between the active alkaloids in the plants. One of the components, the bark of *Banisteriopsis caapi*, contains beta-carboline alkaloids, which are potent monoamine oxidase-A (MAO-A) inhibitors; the other component, the leaves of *Psychotria viridis* [...] contains the potent short-acting hallucinogenic agent N,N-dimethyltryptamine (DMT). DMT is not orally active when ingested by itself, but can be rendered orally active when ingested in the presence of a peripheral MAO inhibitor [...] This interaction is the basis for the psychotropic action of ayahuasca. (p.112)

Callaway et al. (1999) identify three alkaloids of remarkable importance for its psychoactive effect in the vine *B. caapi*: harmine, harmaline, and tetrahydroharmine. These three alkaloids cause reversible inhibition of MAO-A, in this way allowing the DMT, present in the leaves of *P. viridis*, to be active orally. Tetrahydroharmine also slightly inhibits serotonin reuptake. Both actions increase the central and peripheral serotonergic activity, facilitating “novel perceptions of reality” (Callaway et al. 1999). For the researchers, “the resulting visionary effects are a hallmark of this unique plant combination” (ibid, p. 244).

Studies on ayahuasca demonstrate that it may have a positive effect on mental health. Its administration in rats evidenced increase in mobility on the forced swimming test, which is an animal model of an antidepressant effect (Lima et al., 2006; Lima et al., 2007). Barbosa, Giglio and Dalgarrondo (2005) demonstrated a positive subjective evaluation of the experience in 28 individuals who had ingested ayahuasca for the first time, with a reduction in the intensity of minor psychiatric symptoms and an increase in feelings of assertiveness, serenity, and vivacity. The acute administration of ayahuasca was associated with a relief of anxiety symptoms (Santos, Landeira-Fernandez, Strassman, Motta & Cruz, 2007). Qualitative studies indicate that regular ayahuasca use – within a religious context – seems to be effective in reducing some forms of drug abuse (Doering-Silveira et al., 2005b; Grob et al., 1996; Santos, Moraes & Holanda, 2006). This so-called “harm reduction” effect of ayahuasca has led Tupper (2008) to propose the use of ayahuasca as a “benefit maximization” strategy for drug abuse and dependence. Some studies showed modest evidence that neuropsychological memory testing of ayahuasca users present better or equal results compared to controls (Doering-Silveira et al., 2005a; Grob et al., 1996). It is necessary to note, however, that more studies with more subjects are necessary for firmer replications of these preliminary results.

In an internal UDV paper, Pereira and Brito (2001) reject that ayahuasca may be regarded as a drug of abuse, or cause dependence, arguing that terms as “abuse” or “dependence” cannot be applied to the ritual use of ayahuasca. The authors also evoke a previous discussion about the safe use of psychedelics mentioned in Strassman’s literature review (Strassman, 1984), reasoning that the adverse effects of hallucinogen use are associated with unsafe environments, that is, in recreational context and/or led by inexperienced people – although it is complex and controversial to determine what is exactly a “safe context.” Despite recent review and theoretical articles placing emphasis on positive and therapeutic aspects of ayahuasca (Mckenna, 2004; Tupper, 2008), and empirical studies indicating safety in animals (Gable, 2007), there is still much concern in the literature. For instance, there is a group of papers with fragile methodological and theoretical basis and an overcautious view of ayahuasca consumption which is based mainly on the lack of large sample studies and on the concern regarding the onset of latent psychoses and adverse pharmacological interactions (ABEAD, 2002; Costa, Figueiredo & Cazenave, 2005; Laqueille & Martins, 2008). One of these texts (ABEAD, 2002) is a moderately influential technical report, issued by the Brazilian Association of Studies on Alcohol and other Drugs, that has been criticized inside (Pereira & Brito, 2001) and outside the UDV (Santos, 2006).

It is outside this chapter's scope to discuss in depth the psychological effects induced by hoasca. However, it is worth mentioning that, although the beverage is classified as hallucinogenic – due mainly to the presence of DMT – the sedative effect caused by the addition of *B. caapi* generates complex states of mind that can be considered substantially diverse from those found in other substances also labeled as hallucinogens (Ott, 1994; Shanon, 2002). In the União do Vegetal, hoasca is consumed to facilitate a state of “mental concentration,” to facilitate “spiritual development” (CEBUDV, 1989). For members, its effectiveness is linked to the “word of the *Mestre*,” the person who, under the “force” and “light” of the *burracheira* – as the effect of the tea is called in the UDV – directs the ritual works and transmits its Christian doctrine in an interactive service where questions and answers play a major role. Within the UDV the scientific neologism *entheogen*<sup>5</sup> is preferred to describe hoasca, as opposed to its usual classification as hallucinogen, a word with negative connotations due to recreational drug use, a behavior which is strongly disapproved of – along with the use of alcohol and tobacco – by the institution.

This aforementioned set of circumstances and evidences brings up the question of whether and under which conditions the use of hoasca is safe for one's mental health. What we present in the following pages is how the UDV has thus far organized itself in seeking to answer this question.

### **Mental Health, Psychosis, and Human Development**

According to the works of British psychoanalyst Donald Winnicott (1990), health (particularly mental health) may be considered a process of self-integration. This process can be understood in terms of maturity, being influenced by age and environmental factors within the intrinsic potentialities of each person.

This integration or maturation corresponds to a concept of human development as an evolution that doesn't happen in a single ascending line, but in a series of somewhat elliptical rings where each new emerging aspect fortifies a former acquisition and goes back modifying previous possibilities (oral conference proceedings by Boraks, 1998). In this vision, overcoming difficulties requires some degree of previous development and, in turn, dealing with conflicting emotions integrates other developments, thus weaving a web that leads to the strengthening of personality and maturity. Human beings are susceptible to disequilibria and the absence of symptoms is not a guarantee of invulnerability. Psychological homeostasis is important in order to be able not only to experience the constitution and continuity of the *self*, but also to meet what is considered to be *non-self*. Establishing homeostasis is an ongoing process.

From a psychodynamic and phenomenological perspective, psychosis<sup>6</sup> can be considered a radical defense in the face of an experience of agony that exceeds endurable limits – a defense in the face of a collapse from which one needs, in some way, to be rescued to constitute one's *self* (Winnicott, 1988). Such an omnipotent defensive response places the individual in a precarious state of seeming invulnerability, however imprisoned within unimaginable anguish and, in Winnicottian terms, in a constant process or threat of further disintegration.

It is possible that in addition to “normal” individuals, people susceptible to psychotic experience may seek sustenance or support in religion in order to deal with their anxiety – which is clearly justifiable. In psychosis, the individual’s crucial quest is to exist as a human being. Thus, it is possible that people in states bordering on psychosis may look for comfort and help in the ayahuasca religions. Therefore we must ask what would be the consequences for them if they were to get in contact with the UDV.

### **Psychotic Episodes and the Use of Psychoactive Substances**

It is well documented that there is an association between hallucinogen use and psychotic episodes in susceptible individuals, though it is not fully clear in the literature as to how to explain this association in causal terms. For instance, according to the fourth revised edition of the Diagnostic Statistical Manual of the American Psychiatric Association (DSM-IV-TR; American Psychiatric Association, 2000), there is still controversy over whether hallucinogen use actually causes the psychotic episodes itself, or if it precipitates psychotic symptoms only in susceptible individuals, or if it is an early sign of a developing psychotic process.

There are several factors that can contribute to the onset of psychotic episodes, including the use of antidepressants and other pharmacological agents. Since the use of ayahuasca is a significant experience, it is possible that it might be part of a diverse set of factors that may set off psychotic reactions in susceptible individuals. Very often, however, in the course of the mental states elicited by ayahuasca, strong emotional reactions or brief distress may occur, depending on the individual’s condition and circumstances, without major psychiatric developments, similar to what could possibly happen during psychotherapeutic processes.

Sometimes, situations of crisis are experienced and overcome without the need for medical intervention, being what Grof called “spiritual emergencies” (Grof & Grof, 1989a). These must not be confused with psychotic episodes. Such emergencies, as is understood in the field of Transpersonal Psychology, are strong existential crises that surface when the necessity for spiritual development comes closer to consciousness, exposing the need for the individual to integrate adverse aspects of his or her personality. Nevertheless, the existence of any type of clinical incidents of a psychotic nature in the population using ayahuasca, even if very infrequent, would justify an internal set of monitoring tools and procedures that could assist in the early detection and institutional response to possible mental health incidents. Since the definition of *epidemiological surveillance* is “the process [...] used to collect, manage, analyze, interpret and report [...] reliable information about the status of diseases or their antecedents in [...] populations” (Buehler, 2008, p. 459) we may consider the DEMEC Psychiatric Monitoring System as an internal mental health epidemiological surveillance system.

### Setting up the DEMEC Psychiatric Monitoring System

In order to make this kind of information available within the UDV, DEMEC developed in 1994 a Psychiatric Monitoring System of Hoasca Users in the UDV (Lima et al., 2002), as mentioned in the introduction.

Initially, a pilot study was conducted with the main objective of seeking out and evaluating cases, as well as defining standards for reporting future mental health occurrences. Case information was gathered both retrospectively and prospectively. First, UDV mental health professionals reported to DEMEC's Mental Health Commission their recollection of major psychiatric incidents during the period from 1991 to 1994. Most of these first incidents reported were related to UDV Administrative Units near where these professionals were located (mostly Southern and Southeastern Brazil). Then, during the data collection period from December of 1994 to May of 1998, new cases started to be added from other UDV administrative units.

Throughout this time, 20 cases were reported, being 15 men and 5 women, among which 7 cases presented psychotic or psychotic-like phenomena. The DEMEC team preserved the principles of medical confidentiality, although not all individuals were informed that these data would be collected, since many of them had stopped attending or had never joined the UDV, and their contacts were lost. For this pilot study, DEMEC used as reference the diagnostic criteria from the World Health Organization's International Classification of Disease, tenth edition (ICD-10; WHO, 1993). Based on the collected data, a 5-class case categorization was created depending on the relationship between clinical history and hoasca drinking, as follows in Table 1:

<p>1 – <b>Onset</b>: when hoasca use has an immediate temporal relationship with an observed clinical picture, in an individual without a preexistent psychiatric history;</p> <p>2 – <b>Relapse/Recurrence</b>: when hoasca ingestion has an immediate temporal relationship with the beginning or worsening of a clinical picture, in an individual with preexisting psychiatric history and/or active disorder;</p> <p>3 – <b>Predisposing factor</b>: when the consumption of hoasca does not present any immediate temporal relationship with a clinical picture, although it could have contributed as one of several factors involved in the manifestation of the observed situation, in individuals with or without psychiatric history;</p> <p>4 – <b>No relationship</b> could be evidenced connecting hoasca use and a clinical picture – when there is no immediate temporal relationship between use and an observed picture and there is no data supporting that the experience with hoasca may be a factor among those involved in case predisposition;</p> <p>5 – <b>Indeterminate</b>: clinical picture under investigation, still lacking sufficient data.</p>
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Table 1: Case categorization of relationship between hoasca intake and the outbreak of psychotic symptoms based on 7 reported cases that occurred between 1991 and 1998

### The Monitoring System Results (1994-2007)

Cases that took place from 1991 to 1994 are not presented here, since they are probably biased. Their role was to establish a reference for setting up case reporting procedures within the UDV. We may then consider that the Monitoring System started to operate on a regular basis in December of 1994. In the timeframe between its introduction and December 2007, 51 cases (36 males, 70.6%) were reported to the Mental Health Commission. Among these cases, 29 (57%) presented psychotic features. In 18 (62%) out of the 29 cases of psychosis the afflicted individuals had suspended hoasca use, while 11 continued regularly attending the UDV ritual sessions. Regarding gender, 21 (72.4%) were male. Considering the most recent case data available, DEMEC concludes that 19 (65.5%) of the 29 cases with psychotic features have a relationship with hoasca use, as seen in Table 2:

- 1) Onset: 4 cases.
- 2) Relapse/Recurrence: 5 cases.
- 3) Predisposing: 10 cases.
- 4) No relationship: 10 cases.
- 5) Indeterminate: no cases.

Table 2: Number of psychotic cases reported between 1994 and 2007 to DEMEC Psychiatric Monitoring System, according to their relationship to hoasca intake.

Note that even in the cases in which hoasca seemed to be the main onset factor, the scrutiny of the retrospective reports of these cases presented what seemed to be pre-morbid personality aspects or predisposing tendencies prior to the use of hoasca.

Based on these acquired reports of psychosis, the DEMEC Mental Health Commission derived the following diagnoses from the available data (Table 3), using ICD-10 criteria (WHO, 1993).

- Schizophrenia (F20-F20.9) – 9 cases;
- Acute and transient psychotic disorders (F23) – 4 cases;
- Unspecified non-organic psychosis (F29) – 2 cases;
- Severe depressive episode with psychotic symptoms (F32.3) – 4 cases;
- Psychosis in incidents associated with substances (F10.5-F19.5) – 6 cases;
- Bipolar affective disorder, psychotic manic episode (F31.2) – 4 cases.

Table 3: Diagnostic estimates for the 29 cases with psychotic features reported in the UDV, according to the ICD-10 (WHO, 1993)

### Risk Estimation of Psychotic Outbreaks in the UDV

The *incidence rate* is an epidemiological measure of risk that is calculated as the occurrence of new cases of a given illness divided by the sum of a specific population at risk for a determinate time unit (Greenland & Rothman, 2008, p. 34).

The UDV has enough data for incidence rate estimation, since we know the numbers of psychotic outbreaks in the UDV (“disease” onsets) and a fairly accurate estimate for the population of hoasca users for each year within the studied time frame. Using as reference the only Brazilian study on the incidence of first-episode psychosis, which estimated the number of new cases of psychosis that contacted health services as 15.8 per 100,000 person-years (95% confidence interval: 14.3-17.6) (Menezes et al., 2007), we can appraise whether or not the numbers reported by the UDV Monitoring System exceed the figures derived from what we would expect for the general Brazilian population.

To calculate the UDV population at risk of developing psychosis during the period (the denominator of the incidence equation), every record or estimate of the UDV population from each year studied must be summed. Considering the censuses carried out in the UDV during the period 1994-1999 (CEBUDV 1999) and 2001-2002 (CEBUDV 2008) and using population estimates for the years without census, we come to the figure of 130 thousand person-years at risk of a psychotic occurrence during the period between 1994 and 2007.

Once we apply to the incidence formula the Brazilian estimate of first-onset psychosis and the UDV person-years estimate in the denominator:

$$\frac{15.8}{100,000} = \frac{\text{expected number of new cases}}{130,000}$$

$$\text{expected number of new cases} = \frac{15.8 \times 130,000}{100,000} = 15.8 \times 1.3 = 20.54$$

Therefore, based on the number found in the study by Menezes et al. (2007) – which registered only cases that were serious enough to seek health services – around 20.5 first-episode psychotic cases should be expected in UDV context during the period that encompasses the reports studied in this chapter. If we consider the 95% confidence interval, the number of new cases would range between 18.6 and 22.9.

It is important to say, however, that the existence of some reducing “filters” in the UDV suggest that its number of new cases is probably lower when compared to a hypothetical situation where equivalent doses of ayahuasca would be served with the same frequency to a general population sample. Due to the UDV’s institutional culture of prior evaluation of persons interested in drinking hoasca for the first time, there is a decreased chance that individuals with a history of severe mental illnesses or pre-morbid and perceptible mental symptoms come to eventually drink hoasca in regular quantities. Another “filter” is the fact that to be a UDV member – and therefore regularly drink full doses – one must be of legal age (in Brazil, 18 or older). This reduces the chance of hoasca consumption in an age range that is particularly prone for the onset of psychosis, especially in males (15-17 years old). Also, it has been

reported that religiosity is associated with better mental health, even in the cases of psychosis (Koenig, 2007).

It is obvious that from this simple assessment with such limited sample and methodology, definitive statements about precise levels of incidence and/or predominance of psychosis in the context of the institution cannot be extrapolated, since mild (and even some severe) cases may not have reached the Monitoring System. Also, considering that many cases are retrospective in nature, that some cases have been lost to institutional follow-up and the fact that the evaluators are subject to not being neutral, there is the probability of a sizable amount of diagnostic error.

However, we believe that some general inferences can still be made based on these data. Considering the large flow of people that attended ritual sessions in UDV Administrative Units during that period, the rates of psychiatric incidents – psychosis in particular – are not very expressive from an epidemiologic standpoint. If onset and predisposing cases are considered together, the number of 14 episodes is less than the lower confidence interval estimation of 18 expected cases.

Another way to analyze these data on psychiatric occurrences is to calculate an estimation of the number of sessions that happened between December of 1994 and December of 2007 and verify an overall risk for a psychotic outbreak to happen associated to a given session. Bergman (1971) estimated the number of psychotic outbreaks among Navajo members of the Native American Church – which uses peyote as a religious sacrament in a setting that is comparable to the UDV – and found the result of one psychotic reaction per 70,000 peyote ingestions. A similar method also can be used to estimate the occurrence of psychosis in relation to the average number of individual ingestions of hoasca within the studied period. The regular member is supposed to take part in two hoasca sessions each month, besides extra sessions and annual celebrations. There are also additional sessions for members who are part of the UDV hierarchy. Bergman intentionally underestimated the number of peyote sessions in his estimation of psychotic reactions.<sup>7</sup> We will similarly consider an average of only 12 sessions per member per year, which is probably far less than the regular annual ingestion of hoasca for a typical UDV disciple.

So, taking into account the estimated 130,000 person-years of membership in the UDV between 1994 and 2007, around  $130,000 \times 12 = 1.56$  million servings of hoasca were distributed during this period. As previously reported, during this time 14 new cases of psychosis were observed. Following Bergman, who doubled his reported numbers of psychotic events in order to account for missed cases, we intentionally will overestimate the number of psychotic events in the UDV, considering all 29 reported cases;

$$\frac{29}{1,560,000} \cong \frac{1}{53,793}$$

Thus, the number of psychotic occurrences among UDV members would be less than one per 50,000 ingestions – a risk that is somewhat higher than that estimated for the members of the Native American Church. There are, however, many variables that render the comparison of two such different religions impossible – among them the strength of an average dose; the participation or not of psychotic individuals in rituals, and sociological, demographical, and cultural differences of their members. Nev-

ertheless, the ingestion of hoasca in the UDV seems, considering these figures, is significantly safe.

The results presented here are at odds with the figures that emerge from studies on the topic of substance use. Morbidity studies indicate that substance abuse and dependence, particularly with regard to alcohol and *Cannabis*, are strongly correlated with the predominance of mental disorders in general, and psychoses in particular (Seibel & Toscano Jr., 2001).

### **Mental Health Institutional Guidelines**

In acknowledgement of the need for consistent monitoring of mental health incidents, a *Mental Health Guideline* was prepared by the Mental Health Commission. The *Guideline* has the aim of enhancing oversight efforts undertaken by the team of health professionals and DEMEC monitors. This guide contains mental health recommendations, in addition to the *Form for Reporting of Mental Health Incidents* and a *List of Controlled Drugs* (psychopharmacological agents and their potential interactions with hoasca).

Based on these results and the UDV's institutional culture, some recommendations on mental health were established. These recommendations are revised periodically as new evidence is gathered. Concerning the topic of psychosis, they can be summarized as follows:

- People who are about to use hoasca for the first time shall be interviewed individually by the Representative *Mestre* (Master) (responsible for the administrative unit) or by someone designated by him during the informal process of reception of newcomers. If during this process there are gross signs of mental imbalance, hoasca shall be administered only when the situation has been clarified from a clinical point of view.
- If newcomers present severe mental or psychotic symptoms, hoasca shall not be administered to them during symptom presentation; if there are records of previous psychotic outbreaks, it shall only be administered after careful evaluation of current conditions of mental health.
- If any user presents some situation which indicates significant mental distress or disorder, the case shall be referred to DEMEC, so that a clinical assessment can be made for the purpose of evaluating the need for therapeutic intervention to take place outside the UDV.
- In cases that are suggestive of psychotic outbreak, it is recommended that the person temporarily abstain from hoasca use, until the situation returns to normal. Depending on the case, with treatment and proper medical follow-up the user may be able to ingest hoasca in moderate quantities after some time.

### **Drug Interactions**

An aspect that is being considered by DEMEC is the potential risk of pharmaceutical drug interaction with hoasca. This is particularly with regard to selective serotonin

reuptake inhibitor (SSRI) antidepressants, owing to the pharmacological properties of harmala alkaloids present in *Banisteriopsis caapi* and their activity as monoamine oxidase inhibitors (MAOI). The key point of the interaction concerns the association of MAOI activity with antidepressants having significant serotonergic action, something that would be theoretically harmful, based on a potential risk for the onset of a serotonin syndrome (currently being called serotonin toxicity [ST]; Gillman, 2006). This concern led to recommendations inside the UDV and continues to be an object of observation and study (Lima, 1996-1997).

In a reference paper on this subject, researchers Jace Callaway and Charles Grob (1998) called attention to the possibility of such an interaction leading to an adverse reaction, especially for SSRIs:

One aspect of this reaction, known as 'serotonin syndrome,' is characterized by excessive levels of the neurotransmitter serotonin. Symptoms are typically initial euphoria, nausea and confusion followed by tremors, vomiting, convulsions and loss of consciousness, possibly leading to death in extreme cases. (p. 368)

According to these researchers

the combination of MAOIs with SSRIs blocks two essential pathways for serotonin (centrally, in the neuron): its specific metabolism by MAO-A and its reuptake into presynaptic nerve terminals, respectively. The production of serotonin continues unabated; only its main pathways of metabolism are shut down, thus levels increase because nothing is metabolized, as production continues. However, serotonergic activity can pass from therapeutic to fatal levels if its unchecked production becomes excessive. (Callaway & Grob, 1998, p. 368)

Callaway and Grob also note that initiating emergency medical procedures in the face of a few serotonergic symptoms may not seem appropriate at first, since some initial symptoms of serotonin toxicity (ST) are common in typical hoasca doses. Still, they present the following illustration of a clinical case that is considered suggestive of ST: an adult male using an SSRI antidepressant who, an hour after the ingestion of hoasca, presented tremors, perspiration, and confusion, followed by fainting. In the first three hours, the episode continued with sweating, gross tremors and severe nausea and vomiting. Besides being disoriented, he reported intense despair and anguish, associated with the distressing recognition of the fact of having betrayed his wife.

It is not surprising that this case, which was used as a demonstration of adverse effects, presents exemplary characteristics of purgative experiences not unusual in hoasca sessions, where the process of cleaning happens in a literal and visceral way. In the UDV this is usually termed a *peia* (a regional Brazilian term for a spanking) and may be understood as a self-punitive situation. It is not medically clear how it occurs, but strong emotions – especially guilt – commonly surface during the *burra-cheira* as physically purgative experiences. Also, one must remember that the case described by Callaway and Grob did not present symptoms that would not be expected in normal ayahuasca sessions, such as fever or pyramidal rigidity. On the other hand, there is a possibility that the subject's experience without the use of an SSRI could have been milder.

In the First International Conference of Hoasca Studies in 1995, the above-mentioned researchers advanced a recommendation to the DEMEC coordination team that the administration of hoasca to individuals using antidepressants in general should be avoided, especially in the case of SSRIs. As an issue of ethical responsibility, this recommendation was adopted by the UDV, until new observations brought information which allowed the institution to adopt more flexibility in its approach.

Such new information – though not within a formal study – gradually evolved on an observational level. Members of the Mental Health Commission noted that several individuals continued to drink hoasca in ritual sessions for some time, despite having been prescribed antidepressants (including SSRIs) by their own doctors, and were not reporting adverse effects besides the reactions usually experienced with hoasca ingestion. These are facts from empirical observation and show a demand for additional studies on this type of association. Another point to be considered is that the beta-carbolines are, in regular doses, reversible inhibitors of MAO-A (Ott, 1994), and that the safe use of SSRIs in combination with moclobemide (also a reversible MAO-A inhibitor antidepressant) is possible, if carried out with the proper precaution and a gradual therapeutic dose increase (Bonnet, 2003).

Moreover, a result of the pioneering inquiry on hoasca pharmacokinetics indicated the existence of upregulation of platelet serotonin uptake receptors, which would expand the safety margin among these same users, who were also using serotonergic antidepressant medications: “With the regular use of hoasca, subsequent periodic increase in levels of serotonin may signal a compensatory upregulation of serotonin uptake sites on blood platelets” (Callaway et al., 1999, p. 253).

So, the previous recommendation’s rigidity – proscribing hoasca administration to people using SSRIs – has become more flexible, though still maintaining some caution. Currently, the recommendations are considered by DEMEC members as a preventive guideline with respect to pharmaceutical drug interactions:

- Newcomers who are about to drink hoasca for the first time and are using serotonergic drugs shall be given reduced quantities of hoasca for the first months.
- People who have already been drinking hoasca tea for some time and start to use serotonergic drugs shall reduce hoasca ingestion temporarily as the treatment begins.
- For the purpose of follow-up, documentation and case-specific observation, it is considered important that DEMEC be informed when disciples are using serotonergic drugs.

With its recommendations, the UDV neither aims at denying nor exaggerating the risks of hoasca use. Rather, its aim is to consider those risks within a pharmacological framework that must be integrated with other levels of analysis, including actual behavior and interactions, emotional and symbolic intentions of hoasca users, and the setting of each religious ceremony, which includes, for UDV members, transcendent and spiritual aspects.

## Conclusion

The use of hoasca challenges the person who drinks it with a search for individual limits and resources. One needs a minimum of psychological stability to achieve such personal development without a major psychiatric crisis. Also, personal characteristics evidently interact with ritual circumstances. This emphasizes the importance of set and setting when using the substance, something that may define safety and satisfaction throughout the experience (Strassman, 1995).

Considering hoasca's psychoactive nature, the issues connected with psychotic susceptibility, and the rising medical use of psychotropic substances whose degree of interaction with hoasca are still not fully understood from the scientific point of view, the UDV states that, at the moment, an internal system of epidemiologic surveillance is justified. The Psychiatric Monitoring System exists within the limits of medical ethics for internal surveillance and as a safeguard for the health of UDV associates and newcomers.

Within the UDV, a culture of care has already been established since its beginnings. The Monitoring System is a medical expression of this culture. It assumes the role of an institutional epidemiological surveillance system. From its findings, DEMEC formulates a body of recommendations and guidelines that orient the administrative units regarding severe mental disorders and potential drug interactions.

The history of mental health occurrences in the UDV speaks in favor of the possibility that hoasca may be used in a sufficiently safe way. Once simple measures are taken, empirical evidence and DEMEC records seem to indicate that people who consume hoasca are not under a greater risk of mental disorders – particularly psychotic disorders – than the general population.

More studies, however, are necessary, especially those demonstrating quantitative and epidemiological rigor, with the objective of investigating the safety of the ayahuasca-SSRI interaction. We hope that the UDV maintains its tradition of open doors for research in this direction.

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- 1 In this text the word *hoasca* will be used as a synonym for *ayahuasca* when used specifically within the context of the UDV (where it is also denominated *Vegetal*). Whenever the term *ayahuasca* is used it refers to the broader context either within or outside the UDV.
  - 2 Two studies estimated the prevalence of antidepressant use in urban samples of Southern Brazilian general populations to be around 9%, with a prevalence of selective serotonin reuptake inhibitors that ranged from 1.7 to 5.5% (Garcias, Pinheiro, Garcias, Horta & Brum, 2008; Maggioni, Scolaro, Mella Junior & Mella, 2008). Brazil's National Health Surveillance Agency pointed out a 40% increase in antidepressant sales from 2003 to 2007 in this country (Pinho & Guimarães, 2008).
  - 3 Translated by the authors
  - 4 'Estrompado' is a Brazilian regional idiom that is used to characterize a screw that has become stripped due to excessive use so that it just turns around and around but cannot be tightened anymore. This metaphor has been used within the UDV to describe the 'memory' (mind) that is not able to be positively transformed through hoasca use. 'Worn-out' is also a term that describes both material and personal exhaustion, and has been chosen as the translation within the context of this chapter.
  - 5 The term *entheogen* was coined around 1979 by a group of ethnobotanists, historians and scholars of mythology (Ruck, Bigwood, Staples, Ott & Wasson, 1979).
  - 6 The broad psychiatric term "psychosis" corresponds to syndromes where the following symptoms may be present: perceptual disturbances (auditory hallucinations in most cases, but sometimes other types of hallucinations, pseudo-hallucinations or perceptual illusions), delusional beliefs (peculiar ideas that the subject does not share with his/her cultural background), disorganized or culturally unusual behavior or thinking and, occasionally, major personality changes. When symptoms are present, there may be great difficulty with social interaction and considerable impairment in carrying out the activities of daily living. The ultimate causes of diverse types of psychosis are as yet unclear, but there is evidence that biological, cultural, and personal factors are involved.
  - 7 Bergman (1971) intentionally underestimated the number of peyote ingestions from twice a month to once every two months. We are unfamiliar with the observations that made him opt for this approach, but our personal observations clearly indicate that a regular UDV member rarely attends less than one session per month.