TITLE: THE USE OF AYAHUASCA IN THE INVESTIGATION OF SERIOUS CRIMINAL OFFENSES (FELONIES): A SCIENTIFIC AND LEGAL ANALYSIS

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This article explores the hypothetical use of ayahuasca in the investigation of serious criminal offenses, inspired by the example of agent Cooper from the television series "Twin Peaks", where altered states of consciousness helped find answers to unsolvable questions. The analysis covers the history of ayahuasca, its biochemical effects, possibilities for legalization by analogy with the "lie detector", and the prospects for its integration into U.S. criminal and criminal procedural legislation. Additionally, the microdosing of fly agaric mushrooms (Amanita muscaria) is considered as an alternative psychedelic approach. Based on an analysis of scientific sources, legal precedents, and ethical aspects, it is established that there is an insufficient scientific basis for the application of ayahuasca in investigations, as well as significant legal and ethical obstacles. The results emphasize that, despite ayahuasca's therapeutic potential, its use in criminal investigations remains hypothetical due to risks and a lack of evidence. These findings are useful for understanding the limitations and possibilities of psychedelics in a legal context, which may contribute to further research and respect for cultural traditions.

Problem statement

The use of psychedelics, such as ayahuasca, in criminal investigations represents an unexplored area, generating interest due to their ability to induce altered states of consciousness. This could potentially be useful for accessing suppressed memories or obtaining answers to complex questions, as depicted in the series "Twin Peaks". The problem lies in assessing the extent to which such methods could be applicable in real investigative practices, considering scientific, legal, and ethical aspects.

State of research on the problem

Contemporary research on ayahuasca focuses on its therapeutic potential, including the treatment of depression, anxiety, and PTSD. Works by authors such as McKenna and Labate elucidate the biochemical and cultural aspects of ayahuasca, but its application in criminal investigations remains unstudied. Similarly, data on research into fly agaric microdosing is limited. The legal aspects of using psychedelics in law enforcement practice are also underdeveloped, despite precedents with the polygraph. The question of the reliability and admissibility of information obtained in altered states of consciousness remains unresolved.

Research goal and objectives

The goal of the article is to assess the possibilities and limitations of using ayahuasca in criminal investigations. Objectives include: - analysis of the history and biochemical effects of ayahuasca; - comparison of its potential legalization with the polygraph; - evaluation of prospects for implementation into U.S. legislation; - consideration of fly agaric microdosing as an alternative; - identification of legal and ethical obstacles.

Scientific novelty of the research

The article offers an original perspective on the use of psychedelics in a legal context, comparing ayahuasca with the polygraph and analyzing its potential role in investigations. For the first

time, it systematically examines the possibility of using altered states of consciousness induced by ayahuasca for investigative purposes, taking into account scientific, legal, and ethical aspects.

Main body of the article

Introduction. Ayahuasca – a traditional psychoactive brew used by Indigenous peoples of the Amazon for spiritual and healing purposes [1] – attracts attention due to its potential in treating mental disorders. In recent years, interest has also grown in microdosing other psychoactive substances, such as the fly agaric mushroom (*Amanita muscaria*) [2], highlighting the broader context of psychedelic research. The idea of using ayahuasca in criminal investigations, inspired by the example of Agent Cooper in "Twin Peaks" [3], suggests that altered states of consciousness could help uncover suppressed memories or obtain answers to complex questions. The article analyzes the history of ayahuasca, its biochemical effects, possibilities for legalization by analogy with the "lie detector," and the prospects for its integration into the U.S. criminal legislation [4]. Particular attention is paid to the concept of "playing with time" in the context of ayahuasca and the legal aspects of its application.

History of ayahuasca. *"Ex uno disce omnes"* – "From one, learn about all." This Latin proverb underscores the importance of studying the traditional use of ayahuasca to understand its potential. Ayahuasca, whose name derives from Quechua and translates as "vine of the soul" or "vine of the dead" [5], has been used for centuries by Indigenous peoples of the Amazon, including territories of modern Peru, Ecuador, and Brazil [1]. The brew is prepared by boiling the vine *Banisteriopsis caapi* with leaves of *Psychotria viridis*, which contain dimethyltryptamine (DMT) [6] – a potent hallucinogen. By the 19th century, the ritual use of ayahuasca had become widespread among groups such as the Shipibo-Conibo [7], although its exact origins remain unclear. Archaeological findings, such as a 1000-year-old shamanic pouch containing ayahuasca ingredients [8], attest to its long history. In the mid-20th century, ayahuasca spread beyond traditional contexts through syncretic religions in Brazil, such as Santo Daime and União do Vegetal (UDV) [9], which integrated it into their religious practices. By the late 20th century, ayahuasca gained attention in Europe and North America [9], sparking interest in its therapeutic and spiritual properties, as well as concerns about safety and legal status.

Biochemical effects of ayahuasca. *"Mens sana in corpore sano"* – "A healthy mind in a healthy body" – necessitates considering both the mental and physical effects of ayahuasca when evaluating its application. The psychoactive effects of ayahuasca are due to the synergistic interaction of DMT [6], contained in *Psychotria viridis*, and beta-carboline alkaloids (harmine, harmaline, and tetrahydroharmine) [10], present in *Banisteriopsis caapi*. Beta-carbolines act as monoamine oxidase inhibitors (MAOIs) [11], preventing the breakdown of DMT in the gastrointestinal tract and liver, allowing it to cross the blood-brain barrier and induce intense psychedelic experiences [12]. These experiences include vivid visual and auditory hallucinations, altered perception of time and space, and profound psychological insights or emotional releases. At the biochemical level, ayahuasca affects serotonin, dopamine, and norepinephrine systems [13], which play key roles in regulating mood, cognition, and perception. Research suggests ayahuasca may promote neuroplasticity [14], enhance emotional processing [15], and stimulate introspection, making it a promising agent for treating mental disorders such as depression, anxiety, and post-traumatic stress disorder (PTSD) [16]. Some studies also indicate its potential in treating addictions, showing reduced alcohol consumption and improved addiction severity index scores among ayahuasca users [17]. However, ayahuasca use is associated with risks. Physical side effects include nausea, vomiting, and diarrhea [18], often interpreted as "purging" in traditional contexts. More serious risks include psychological distress, exacerbation of pre-existing mental disorders, and dangerous interactions with medications, particularly selective serotonin reuptake inhibitors (SSRIs) and other antidepressants [18], due to its MAOI properties. Individuals with a history of mental disorders such as schizophrenia or bipolar disorder are advised to avoid ayahuasca due to the risk of manic or psychotic episodes [19].

The concept of "playing with time". Ayahuasca is often associated with altered time perception, described by users as "stretching" or "compressing" time, as well as experiences resembling time travel or access to past events. These

effects are linked to DMT's action on serotonin receptors [20], which influence time perception in the brain [21]. In the context of criminal investigations, this could theoretically help witnesses or victims recall suppressed events, but such experiences are subjective and currently lack scientific validation for investigative use. However, it must be acknowledged that the absence of sufficient objective data today makes this concept speculative, yet it holds potential.

Microdosing fly agaric mushrooms (*Amanita muscaria*). The fly agaric mushroom (*Amanita muscaria*) [22] contains muscimol and ibotenic acid [23], which act on GABA-A receptors in the brain [24], causing sedative and hallucinogenic effects [25]. Microdosing involves taking sub-perceptual doses of these mushrooms, typically to enhance creativity, improve mood, or aid personal development. Users report reduced anxiety, improved sleep, and increased focus [26]. However, fly agaric is considered poisonous, and its use can lead to serious side effects, including nausea, confusion, and, in rare cases, death at high doses [25]. The practice of fly agaric microdosing remains controversial, and scientific research is limited [26]. As with ayahuasca, the use of fly agaric in criminal investigations lacks a scientific basis and faces similar legal and ethical challenges.

Proposal for the legalization of ayahuasca in criminal investigations. My idea of using ayahuasca to obtain information in criminal investigations, inspired by the fictional example of agent Cooper in "Twin Peaks" [3], is intriguing but currently lacks a comprehensive scientific foundation. Theoretically, ayahuasca's ability to facilitate access to suppressed memories [27] or deep emotional states [15] could be useful in cases where witnesses or victims have fragmented or suppressed memories of events. However, the "subjective" nature of these experiences makes them unreliable for legal purposes today without empirical validation.

Comparison with the legalization of the "lie detector". The "lie detector" (polygraph) [28] was developed in the early 20th century and used to measure physiological responses such as pulse rate, blood pressure, and perspiration, considered indicators of deception. Despite controversies over accuracy (60 – 90%) [29], polygraphs gained limited acceptance in U.S. law enforcement, although their results are generally inadmissible in court due to insufficient scientific reliability. In 1923, the case *Frye v. United States* [30] established that polygraphs did not meet scientific acceptability standards, limiting their use in courts. The Employee Polygraph Protection Act of 1988 [31] restricted their use in the private sector but permitted it in government agencies. Unlike polygraphs, ayahuasca currently provides no objective data; its effects are subjective and dependent on individual experiences. This makes it less suitable for legal application. Although, using ayahuasca, the same question could be explored by different, unfamiliar people. Furthermore, ayahuasca is classified as a Schedule I substance in the U.S. [32], meaning it has no recognized medical use and a high potential for abuse. Exceptions exist for religious use [33], as in the case of Santo Daime and UDV churches, which won the right to use ayahuasca through a Supreme Court decision in 2006 (*Gonzales v. O Centro Espírita Beneficente União do Vegetal*) [34].

Path to legalization. Legalizing ayahuasca for criminal investigations in the U.S. would require the following steps: - scientific validation: conducting research confirming that ayahuasca can provide reliable information for investigations. This would require studying its effects on memory [27], truthfulness, and access to subconscious information; - legal framework: developing legislation permitting the controlled use of ayahuasca for investigative purposes, with informed consent [35], medical supervision, and protection of participants' rights; - ethical considerations: addressing issues related to coercion [36], psychological risks [19], and cultural appropriation [37]; - judicial precedents: establishing standards for the admissibility of information [38] obtained via ayahuasca, analogous to polygraphs, which would require overcoming skepticism regarding its scientific reliability; - public acceptance: conducting educational campaigns [39] to foster acceptance of ayahuasca by law enforcement and the public.

Integration into U.S. criminal legislation. *"Fiat justitia ruat caelum"* – "Let justice be done though the heavens fall" – emphasizes the pursuit of truth but also reminds of the need for caution when using unconventional methods. Integrating ayahuasca into U.S. criminal and criminal procedural legislation [4] would require: - amendment of the Controlled Substances Act

[32]: reclassifying DMT or creating exceptions for the use of ayahuasca in investigative contexts, analogous to religious exceptions [33]; - establishment of regulatory bodies [40]: involving agencies such as the DEA or FDA to oversee the preparation, dosing, and application of ayahuasca; - development of protocols [41]: creating standardized procedures for the safe and effective use of ayahuasca in investigations; - case law: forming precedents affirming the admissibility of information [38] obtained via ayahuasca, which would require overcoming *Daubert* [42] and *Frye* [30] standards. However, ayahuasca's current legal status, lack of definitive scientific data, and cultural barriers make its legalization for investigative purposes in the U.S. currently unrealistic in the near future.

Conclusions

Ayahuasca is a complex substance with a rich history, profound biochemical effects, and potential therapeutic benefits, but its use in criminal investigations remains hypothetical due to insufficient scientific evidence, health risks, and legal barriers. Fly agaric (*Amanita muscaria*) microdosing also generates interest, but its application for investigative purposes is unsubstantiated and associated with toxicity. Legalizing ayahuasca for criminal investigations in the U.S. would require significant legislative changes, scientific validation, and resolution of ethical issues, which currently seems unrealistic. Further research on psychedelics may open new perspectives but must be conducted with respect for cultural traditions. Key points: - ayahuasca – a traditional psychoactive brew used in the Amazon – can induce altered states of consciousness, but its application in criminal investigations lacks full scientific substantiation; - research shows ayahuasca's therapeutic potential, but its ability to provide reliable information for investigations is unproven, though it holds potential; - fly agaric (*Amanita muscaria*) microdosing is being studied for mood enhancement and creativity, but its use for investigative purposes is also unsubstantiated; - the cultural significance of ayahuasca requires a respectful approach to avoid appropriation of Indigenous traditions. While ayahuasca and fly agaric microdosing are of interest as potential tools for accessing the subconscious, their application in criminal investigations remains hypothetical due to lack of evidence, risks, and legal constraints.

"Non scholae sed vitae discimus" – "We learn not for school, but for life." Knowledge about ayahuasca and fly agaric mushrooms may have broader implications extending beyond investigative or therapeutic contexts.

Table: comparison of ayahuasca, fly agaric, and the "lie detector" in the context of criminal investigations

Aspect	Ayahuasca	Fly Agaric (Microdosing)	"Lie Detector»
Mechanism of Action	Induces altered states of consciousness via DMT and MAO inhibitors	Acts on GABA-A receptors through muscimol and ibotenic acid	Measures physiological responses (pulse, blood pressure, respiration)
Scientific Validation	Lacks validation for investigative use; limited therapeutic data	Lacks validation for investigative use; inconclusive data	Controversial but utilized in law enforcement
Legal Admissibility	Not admissible; subjectively obtained information rejected in court	Not admissible; subjectivity and toxicity preclude use	Generally inadmissible in court but applied in pre-trial investigations
Risks	Psychological distress, medication interactions	Toxicity, potential severe side effects	False results, subject stress
Cultural Context	Profound spiritual connection to Indigenous traditions	Historical use in shamanic rituals	No inherent cultural significance

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