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# Exceptional states of consciousness and psychotropic substance consumption

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## INTRODUCTION

For decades, psychotropic substance consumption has been used to achieve exceptional altered states of consciousness, in which the sensory-perceptive alterations take on great importance and the human being uses them as a form of transcendence, elevation and, definitively, of obtaining a state of consciousness different from the normal one.

In this article, we have made a historical review, through relevant persons, of the evolution of the consumption, of its social repercussion and of the substances that have resulted in achieving said states.

## DEFINITION OF CONSCIOUSNESS AND EXCEPTIONAL STATE OF CONSCIOUSNESS

Consciousness is a difficult-to-define abstract concept that can be understood better from its absence. In its definition, other areas of psychic knowledge, such as attention or orientation, must be considered so that its psychopathological limits are confusing.

Consciousness (from Latin *conscientia* 'shared knowledge') is the knowledge that a person has about themselves, of their existence, state and actions and of their world. It is in close relation to perception, since consciousness organizes and gives meaning to that which we perceive.

Briefly, we can speak about simple external consciousness, this being where reality develops as if it were a scenario. On the other hand, there is a much more abstract, reflexive and characteristic consciousness of the human being in which such complex phenomena as that of Theory of the Mind and self-consciousness appear.<sup>1</sup>

The concept of exceptional state of consciousness is used to refer to modes of consciousness beyond that of wakefulness, of sleep and dreaming, which do not correspond to alterations of the level or structure of the usual

consciousness. In said states, the human being is highly vulnerable since there is a complex alteration of perception, of self-consciousness, of capacity to act and of intentionality.

## PSYCHODELIA

According to the Spanish Royal Academia Dictionary, psychodelia would be the tendency that arose in the 1960's, characterized by extreme excitation of the senses, stimulated by hallucinogenic drugs, shrill music, lights of changing colors, etc.

The term *psychodelic* was created by the British psychologist Humphry Osmond and means "that which the soul manifests." In general, it refers to an artistic modality characterized by evoking own experiences, in which phenomena such as synesthesia, alterations in perception of time and space and sense of identity take on great importance.<sup>2</sup>

To reach this "psychodelic state," *psychodelic drug* are often taken. They drugs are so named because they induce different states than the normal ones in which hallucinations take on great importance and where the individuals seem to reach a state of elevation and opening of themselves that lead them to have unique mystic, spiritual and transcendental experiences.

Within these drugs, we find LSD, Peyote, Psilocybin mushroom, Ayahuasca, Amanita Muscaria and Cannabis Sativa.

## WASSON, MARÍA SABINA AND THE PSILOCYBIN MUSHROOM

On 13 May 1957, the magazine *Life*, published an article by Doctor Wasson on the fungi of the Psilocybe species. On the front page, mention was made about strange visions produced by these mushrooms. Interest in psychodelic drugs may have begun again after this surprising front page.

Robert Gordon Wasson (1898-1986) was a North American writer and ethnobotanic married with Valentina Pavlovna (1901-1958), of Russian origin, who worked as a pediatrician. Dr. Wasson focused his studies on entheogenic mushrooms and his investigations were included in self-applied books with limited editions that were never reprinted. The initiation of his works on ethnobotanics began during his honeymoon in 1927. He was interested in the use of mushrooms and their use according to different cultures. In 1952, the anthropologist read a clipping from the press by Robert Graves on the use of mushrooms in Mexico accompanying a religious cult. As a result of this, the married couple traveled to Mexico, to the area of the Sierra Mazateca in Oaxaca, where they met María Sabina.

María Sabina Magdalena García (1894-1985) was a priestess of mushrooms, perhaps the best known Shaman thanks to the mentioned anthropologist. María Sabina was born in Huautla de Jiménez, within a family of traditional physicians who used plants and mushrooms as curative substances. She lost her father when she was three and was brought up by her maternal grandparents. At age 14 years, she married Serapio Martínez and had three children. María Sabina used mushrooms, which she affectionately called "My Saint Children" in rituals at night with curative and spiritual purposes.<sup>3</sup>

María Sabina invited the married couple Wasson to participate in a "Nocturnal Vigil," that lasted for several days. She offered them samples of all the mushrooms she used. On the night of 29 to 30 June 1959, Wasson had the opportunity to participate in the Vigil. On his return to the United States, Wasson published a complete story about his venture in a special article for the *Life* magazine. The sensations that the North American had that night are recorded in that article, through the description of the psychic effects of the teonanacatl. On her part, María Sabina described that meeting in her own way: "When the foreigners took the saint children with me. I didn't feel anything bad. The vigil was fine. I had different visions than usual. I saw places I had never imagined existed. I reached the place the foreigners came from. I saw cities. Big cities. Many houses, big ones. ... After, I knew that Wasson had been very impressed .... he came other times. He brought his wife and his daughter. Different people came with him as well."<sup>4</sup>

The article of Wasson fell into the hands of Dr. Albert Hofmann, the Swiss chemist who had discovered LSD years earlier. He was quite interested in the phenomenon of mushrooms capable of causing hallucinations in an indigenous population of a Latin American Country. He arranged to contact Wasson and together they made a second trip to Oaxaca to gather different samples of teonanacatl. Hofmann analyzed them in his laboratory in Switzerland and was able to isolate the active ingredients of

*Psilocybe Mexicana*, which he called psilocin and psilocybin. Hofmann was so thankful to María Sabina for her hospitality and cooperation that he considered paying her for her kindness by returning to Huautla with an unusual present: capsules of pure psilocybin. María Sabina took the capsules and -according to Hofmann- she was pleased and pointed out the similarities of their effects, although she did not stop using her mushrooms.<sup>5</sup>

In 1968, Wasson published the book, "The marvelous mushroom: Teonanacatl on Micolatria in Mesoamérica." Dr. Wasson told his story of participating in a "Mazatec," that is the sacred ritual of eating mushrooms. Thus, he brought his knowledge to the general public. The book is about the person of María Sabina, who became very popular among the North Americans who were immersed in the hippie culture. After that, María Sabina began to receive many visits from persons outside of her community, whose only objective was to have a psychedelic experience. Members of her community accused her of using her knowledge in a despicable and immoral way.<sup>4</sup> María Sabina died immersed in misery in the year 1985, since she did not collect for her acts. Her character is used by many merchants to sell their products. There are sites and shops with her name, and even a music group. Among the famous persons who visited her, it was rumored that John Lennon and his wife were included and that this singer visualized his own death, which months later brutally became true when he was assassinated. There are no current conclusive documents on this meeting and Alvaro Estrada defines it as simple popular imagery.<sup>4</sup>

In Nahuatl, hallucinogenic mushrooms are called *Teonanacatl*, which means divine mushroom (hallucination-producing mushrooms of any botanic variety, especially those of the Mexican *psilocybe* species). There are about 230 species of mushrooms of the *Psilocybe* species and at least 54 are found in Mexico, these having been used as hallucinogenic-producers by the Mesoamerican Pre-Columbian cultures. Standing out among them are the *P. semilanceata*, *P. mexicana*, *P. aztecorum*, *P. cubensis* and *P. caerulescens*. Of the Mexican *psilocybe* species, two alkaloids have been obtained. These are the principal ingredients that product the hallucinatory states: psilocin (psilocin 4-hydroxy-dimethyl-exeptimin) and psilocybin (phosphate ester of the psilocin. 4- phosphoryl phenethyl tryptamine). The latter alkaloid is found in the plant in greater amounts. These mushrooms have a coprophagy character, growing near waste material of animals and they are found in many regions of the earth. Hallucinogenic mushrooms are still used in the region of Oaxaca in la Miseria, la Chinantla, and Mixteca Alta. Another one of the regions that has conserved the medicinal practices with hallucinogenic mushrooms is located in the State of Mexico: San Pedro Nexapa, located in the slopes of Popocatepetl; Tenango Valley and San Pedro Tlaxiaco. Anthropologists state that they were used with ritual purposes in Mexico, Guatemala, and areas of the

Amazons. In the old Maya territory, small stone figures with final touches in form of mushrooms were found dating back from 1000 BC to 500 A.D. It is also known that eating this type of mushrooms was an important part of the religious oracular rites among the Mazatecs, Chinantecs, Chatinos, Mixtecs, Zapotecs and Mixtec of Oaxaca, the Nahuatl of central Mexico and possibly the Otomi of Puebla and Tarascan of Michoacan. The first mention of their use date from some books of the XVI century. One of them mentions their ritual use in the coronation celebrations of Montezuma, the last Aztec emperor.

*Friar Bernardino de Sahagun*, a chronicler of the middle of the XVI century, mentioned mushrooms capable of causing hallucinations. These received, among other names, the general indigenous name of "teonanácatl," as they were considered sacred mushrooms (*"flesh of the gods"*). However, the Spanish listed them as bad or demonic mushrooms that made one drunk, according to testimonies of other writers of the same century, for example, Friar Toribio de Benavente, also called Motolinia and Francisco Hernández, the latter with the name of chief medical officer (protomedico) of the New World. In the writings of Sahagun, we can read: *"There are some small mushrooms in the region which are called teonanácatl; these grow under the grass (hay) of the fields and pastures. They are round, having rather high stipe, slender and terete. When eaten, they have a bad taste, hurting the throat, and they cause intoxication. They are medicinal for fevers and for gout. Only two or three need to be eaten, no more. Those who eat them see visions and feel nauseas of the heart and they see visions that are sometimes frightful or laughable. And they provoke to lust those who have eaten a number, or even a few of them" And to the wild and mischievous youngsters, say that they have eaten nanacatl (sic).*"<sup>6</sup>

Doctor *Francisco Hernández*, physician of the king of Spain, reported that the indigenous liked to eat certain mushrooms that *"produce visions of all types, such as of wars and images of demons... they are much appreciated by the princes in their celebrations and banquets. They sought night-long vigils that are awesome and terrifying."*<sup>7</sup>

Currently, it is still used in indigenous tribes of Mexico in a religious context and in Europe for recreations use.

All the varieties of *Psilocybe* sprout, in generally, in high lands of 1300-1700 m, especially in regions with limestone, also in isolated or very scattered form among the moss, in humid grasslands and in pine and oak tree forests. They measure from 2 to 5 cm in height. The caps have the form of a nipple, flared and are whitish, when they are small and brown when they are large, without ring. They are eaten by mouth, preferably after fasting, alone or mixed with honey, in natural or dry state. The effects begin between 25 to 30 minutes after eating them, and can last up to 6 hours. When the effect reaches the brain, the alkaloids of these

mushrooms decrease the serotonin reuptake in the brain in the periphery.<sup>8</sup> On the sensory level, they produce synesthesias, the sounds are "seen," smells are "felt" and there is a sensation of abandoning the body. Sensation of introspection. On the physical level, they cause mydriasis, sympathetic system disorders, etc. After eating them, the culminating moment is produced at two hours. The threshold of intoxication occurs at 40 micrograms/kilogram weight. Doses greater than 5 milligrams may cause visual illusions, dysphoria, etc. and as the dose is increased, visual hallucinations, bladder retention, and mouth dryness may appear. The growing interest in hallucinogenic mushrooms in European youth has increased medical emergencies due to intoxications. The symptoms affect the central nervous system, the parasympathetic system and the gastrointestinal one. The effects in general are mild and there is no specific treatment.<sup>9</sup>

North American investigators have verified that a hallucinogen present in a mushroom is capable of causing that universally known as mystic experience and positive changes in behaviors and attitudes of the persons. The research provided the so-called magic mushroom (psilocybin) to 36 volunteers and 60% of them stated they had experienced a state in which time and ordinary consciousness dissolved. This experience changed their lives. Some of the volunteers experienced negative, but mild, side effects. The research was developed with empirical measurements of the reactions that are observed in those persons who ate the mushroom and without any religious aim, according to their authors. The mushrooms of psilocybin produce somewhat milder hallucinations than LSD. Depending on the dose, the effects include distortions of sight and hearing, and may also cause sensations of enthusiasm, anxiety and paranoia. The active agent they possess, psilocybin, produces a similar effect to that of serotonin in the brain, although it is still not known in what part of the brain it acts or how it acts.<sup>10</sup>

## HOFMANN, LSD AND SANDOZ

*Albert Hofmann* (1906-2008) was a chemist and Swiss intellect who synthesized LSD for the first time. He also described the structure of quinine, substance that forms the shells, wings and claws of different insects and he isolated the active principle of *Psilocybe mexicana*. Doctor Hofmann began to work for the Sandoz Labs (currently "Novartis") in 1929. In 1938 while he was studying the mushroom of the ergot, he synthesized Lysergic Acid Diethylamide. For five years, not even Hofmann was aware of what he had discovered. On 16 April, 1943, he accidentally contaminated his skin with LSD and felt preoccupied and dizzy, in addition to having an "extremely stimulated" imagination. The next day, and to confirm his theory, he took 250 micrograms of LSD. He had to return home on bike accompanied by his aid, naming this day ("Bicycle day"). He suffered temporal

dissociation, difficulty standing up; he felt as if a demon has possessed him, sensation of imminent death, and on the physical level, mydriasis. Finally, a feeling of gratitude for having immense luck and many fantastic optical illusions.

Lysergic Acid Diethylamide, LSD-25, is commonly known as "acid," and is a drug with psychedelic effects. According to the studies published, no addiction is produced and, at adequate doses, it is not toxic,<sup>11, 12</sup> but tolerance is affected. Its psychological effects include hallucinations, synesthesias, distorted perceptions and dissolution of the ego. It is among the most potent drugs known, so that it is measured in micrograms. Sandoz labs marketed the substance under the name of *Delysid* and many psychiatrists and psychoanalysis of the 1950's and 60's used it. Its indications were focused on its use in psychoanalytic therapy and for the study of psychosis. The therapist was also recommended to take it.<sup>11</sup> It was used to break down the barriers of the unconsciousness, and to easily reveal the repressed contents. It was also used in patients with alcohol consumptions and in patients with end-stage cancer.<sup>13</sup> However, its sale was rapidly forbidden due to its extramedicinal use. In 1966, Sandoz stopped marketing the drug and in 1968, its possession was a minor offense, and its sale a serious offense.

In spite of this, its consumption continued for years, above all in the hippie culture. LSD is one of the most potent natural hallucinogen substances that exist. It behaves as a potent dopamine and serotonin agonists, with affinity for the 5-HT<sub>2</sub> receptor. The greatest concentrations of LSD have been found in the brain, in the visual cortex, reticular formation and limbic system.<sup>14</sup> The effects on the physical and psychological level vary greatly. It depends on the purity of the substance, previous personality, expectations of the user, etc. On the physical level, it causes hyperglycemia, piloerection, tachycardia, mydriasis, insomnia, paresthesia, hyperreflexia, and tremors. On the psychological level, alterations are produced in the mood state, which go from euphoria to sadness. An increased interest is generated in interpersonal relations and also alterations in perception and cognition. What is characteristic of this drug are illusions, hallucinations and synesthesias besides stimulation of the thought processes, considered at times as "creative impulse." It also produces the sensation of "understanding" life and existence.

Studies have been published that state the LSD can develop mental diseases in patients with previous pathological condition, even leading to suicide after taking it.<sup>15</sup> It has been described that the illusions and visual hallucinations may relapse as flashbacks months after its intake.<sup>16-18</sup>

Many public persons have taken LSD, some have even done so openly and have been great defenders of its legalization. Among them is the actor Cary Grant who admitted that he had used LSD and it had "changed his life"

in order to break his alcohol addiction. It has also been used in meditation, psychonautics and artistic creation. After the discovery of this substance, it was said that it produced "artificial schizophrenia," but as *López Ibor* wrote later, this similarity is far from reality. The author states that even though the picture is florid and spectacular, it is not difficult to make the differential diagnosis with schizophrenia and the symptoms do not have its consistency. He adds that an important fact in the use of LSD is the suggestibility of the subject during the intoxication. The thought content is influenced by the environmental circumstances.<sup>19</sup>

The final victory of Hofmann was just before his death. In December 2007 studies were allowed in his native country on the benefits of LSD in psychotherapy and end-stage physical diseases. In Russia and the United Kingdom, its beneficial effects and possible legalization were also studied.

## LSD AND TIMOTHY LEARY

During the 1960's, a movement called "the contraculture" was born. This movement attempted to dissociate itself from established values, tendencies and social forms. In this context, use of psychedelic drugs took on great importance, the prototype being LSD, with therapeutic and spiritual purposes. There are many performers who are interested in its consumption and use it for creative purposes, Timothy Leary having of special importance among them because he was the great defender and promoter of LSD.

Timothy Francis Leary was born in Springfield in 1920. He graduated in psychology in the University of Alabama in 1943, was professor of psychology at the University of Berkeley (California), for five years (1950-1955), director of psychiatric research in the Kaiser Family Foundation and active speaker at the University of Harvard.

The work of Leary was aimed, during his years at the University, at researching how interpersonal processes can affect the development or not of normal personality patterns (*The Interpersonal Diagnosis of Personality*, 1957).

In Mayo 1957, the revolutionary article of Robert Gordon Wasson changed the course of Leary and he decided to travel to Cuernavaca (Mexico) to eat, in person, the mushrooms that produced hallucinatory phenomena:

*"The psychedelic experience is a journey to new realms of consciousness. The scope and content of the experience is limitless, but its characteristic features are the transcendence of verbal concepts, of space-time dimensions, and of the ego or identity. (...) Most recently they have become available to anyone through the ingestion of psychedelic drugs such as LSD; psilocybin, mescaline and others. Of course, the drug does not produce the transcendent experience. It*

*merely acts as a chemical key - it opens the mind, frees the nervous system of its ordinary patterns and structures "*

The implication of Leary in the defense of LSD led him to create a religion "League for Spiritual Discovery," declaring the acid as his Holy Sacrament, and becoming a true "guru of the hippie generation".

Its applications in psychiatry are not as a true medication but as a medicinal resource in the frame of a psychoanalytic or psychotherapeutic treatment.

Lisergic intoxication produces relaxation, even suppression of the I/you barrier, in this way the contact with the doctor is much more intense and in the same sense, there is greater influenciability.

Another important characteristic of LSD and that used by psychoanalysis is the capacity of returning contents or experiences that have already been forgotten or repressed to the consciousness, reliving memories of the early childhood.

In 1966, LSD was declared illegal and all the scientific research programs were stopped. Beginning at that time, Leary intensified his fight for the defense of the acid.

He was arrested and put into jail due to possession of drugs several times. His popularity increased, and he ran for Governor of California, competing against Ronald Reagan. The slogan of his campaign was "come together, join the party," with active support of his candidacy by John Lennon and Yoko Ono with their song "Come Together".

During the 1970's, his imprisonments and flights were continuous, and he was considered by President Richard Nixon as "the most dangerous man of North America." He continued to be a productive writer from the prison, considering this a medium of spiritual transcendence. He headed many movements, formed a part of pictures and songs, is backed by many artists who support his fight.

He died in 1995, victim of prostate cancer.

## PEYOTE, ANTONIN ARTAUD AND OTHER FAMOUS PERSONS

Antonin Artaud arrived to Paris in 1920 when he was 24 years old and after a long experience of stays in psychiatric institutions. As his close friends and family stated, that was where he met André Breton and became radical. He published the first Surrealist Manifesto and assumed the post of director of the Bureau of surrealist research.

He was born in Marcella in 1896. It seems that his mental disease appeared at 16 years of age, coinciding with

this debut in the poetic world. He was hospitalized for 6 years in psychiatric centers and it was in 1918 when we collected his first verses under the title of "*Tritac del ciel*" and oriented his destination towards Paris.

The absolute failure of his first works led him to create the Theater of Cruelty which he defined as "*That which exposed the spectator to the violent impact. For this, the actions are almost always violent, they give preference to words, thus freeing the unconsciousness against reason and logic.*"

After performing his work "*Los Cendi*" for the first time in 1935 and obtaining a new setback, he decided to travel to Mexico and distance himself from the "*abominable*" Europe.

He lived with the Tarahumaras, a Mexican indigenous people, where he thoroughly studied the *culture of the sun* and experimented with Peyote. In Mexico, the author found a culture he considered superior to the Western one, calling it "A Principal Race" and such was its influence that he proposed "*The Conquest of Mexico (La conquete du Mexique)*" as the first performance in the Theater of Cruelty, which depicted the white man as oppressor and putrid against the Indians.

It seems that the consumption of peyote and other hallucinogenic mushrooms potentiated the narrative part of the author but also the mental unbalances, so that his return to Europe resulted in his admission to psychiatric centers for 10 years. One of his most-known stays is that which occurred in the Hospital de Rodez. From there, he wrote hundreds of letters to family, friends, psychiatrists and publishers. There are not anodyne letters, but true starting signals in his war again alienation and oppression of the world. The fight for a strong sense of life, commitment with purity, truth and protection of the weakest.

In 1947, he published the essay "*Van Gogh suicided by society (Van Gogh le suicidé de la société)*," which acquired great acknowledgement and was awarded the prize Prix Saint-Beuve for the best essay. In 1948 he headed a radio program "*To have done with the Judgment of God,*" which was censured for many years, in which Artaud showed his great disappointment in the world he lived in, his fight against psychiatry and inferred the harmed caused by the mental disease.

Antonin Artaud died in Paris on 4 March 1948 at 51 years of age, one and a half years after having left Rodez. Up to the end of his days, he made an effort and fought for his ideas he wrote in Rodez.

Peyote is a small depressed globe-shaped cactus of the cetacean family. It was first isolated in 1896 by the pharmacologist Artur Heffter. Its consumption has a long tradition both for its medicinal properties as for its spiritual

ones. It is extended worldwide as a complement of medication and psychotherapy practices.

That responsible for its psychedelic effects is its principal alkaloid, mescaline. This substance has a chemical structure that is similar to norepinephrine and dopamine, mainly its visual sensory-perceptive alterations being understandable, the so-called "visual hyperesthesia." It seems that after first stage of euphoria, there is a period of mental serenity and muscular relaxation in which attention is shifted from perceptive stimuli to be oriented towards introspection and meditation.

San Pedro is the third cetacean with greater concentration in mescaline, after peyote and a variety *Trichocereus peruvianus* which is more difficult to find. It is a columnar cactus that can grow to a large size and it is mainly found in Mexico, Bolivia, Ecuador and Peru. The name "San Pedro," according to the indigenous culture, refers to its properties of elevation and transcendence since the Christian saint is precisely the watchmen of the Doors in the Sky.<sup>20</sup>

Peyote is consumed by chewing the segments or with liquids, since it is very bitter. San Pedro ate it as powder. Its effects begin at 60 minutes of its consumption and last for 7 to 10 hours. Tolerance is practically null if the doses are spaced at one month at least. There are no signs that consumption of peyote generates physical or psychological addiction.

The Huichols used the liquid extract from peyote to treat and cure wounds of the skin, snake and scorpion bites, intoxications due to jimson weeds and as antiemetic and analgesic, among other uses.<sup>7</sup>

The first writings on peyote were written by Friar Bernardino de Sahagún, who described its effects as follows: *"There is another herb like tunas of the earth, called peiotl. It is white and it is found in the north of the country. Those who eat or drink it see either frightful or laughable visions; this inebriation last two to three days and then ceases. It is a sort of delicacy of the Chichimecas, it sustains them and gives them courage to fight and not feel fear, or hunger, and they say it protects them from any danger."*<sup>16</sup> He was the first white person to describe the effect of the cactus. Bernardino de Ribera was born around the year 1500 in the city of Leones of Sahagún. He was a Franciscan missionary who, in 1529, sailed toward Mexico, where he studied their language, customs and religious beliefs in depth. He wrote *"General History of the Things of New Spain,"* formed by 12 books, which included all that referring to the life of the old inhabitants of the zone. This work was written in three languages: Latin, Spanish and nahuatl, and is also illustrated with many pictures.<sup>21</sup> To right this work, he informed himself directly from the oldest and most prudent indigenous persons. His method, having great scientific strength, has influenced modern investigators. He died in Mexico in 1590.<sup>22</sup>

During this same period, another Spaniard was sent to the same area to study nature. This was *Francisco Hernández de Toledo* (1514–1578), personal physician of King Phillip II. He spent eight years in the area of Oaxaca, and created a file system for each vegetal or animal species. He wrote up to 22 volumes, in which he described up to 3000 different species. Regarding peyote he stated: *"Ground up and applied to painful joints, it is said to give relief."*<sup>123</sup>

*Ludwig Lewin* (1783–1843) was among the first pharmacologists who studied the alkaloids of peyote, and he ate it repeatedly. Of the cactus he stated: *"There is no other plant in the world that causes such prodigious functional changes in the brain. Although these changes only occur under of sensorial specters, or through the concentration of the purest inner life, this occurs under such particular forms, so unsuspected, that the person feeling them is transported to a new world of sensitivity and intelligence. We understand that the Old Indians of Mexico have seen the vegetal incarnation of a divinity in this plant."*<sup>124</sup>

Many scientists were interested in peyote and its qualities. *Hoffman* and his colleague *Schultes*, in their book *"Plants of the Gods,"* wrote that the most spectacular effect of peyote is the kaleidoscopic play of extremely beautiful colored visions: *"glitters and twinkles of colors are seen, whose intensity and purity challenge any description. Frequently, the visions have a sequence that go from geometric figures to strange and grotesque objects, whose characteristics vary from one individual to another."*<sup>7</sup>

To avoid mishaps or not end with a "bad trip" *Antonio Escobedo* recommends choosing the time (at the end of the afternoon or beginning of the night) and the setting (preferably in contact with nature), to count on the supervision of guides, good company, or simply adequate friends, to eat it after a fasting to potentiate the visionary effects and reduce possible nausea and to end the trip with an abundant meal.<sup>25</sup>

Its consumption was forbidden in 1720. The Indians of the north of Mexico and the south of the United States continue using it for ritual and curative purposes to favor communication with the spiritual world.<sup>26</sup> Currently, the most numerous group consuming peyote and who also consider it a sacred substance is the *Native American Church*, which has almost 500,000 supporters. It was created in 1918 by a group of indigenous to restore the consumption of peyote and thus reach spirituality.

## AYAHUASCA AND CEREMONIES IN THE AMAZONS

The name of Ayahuasca comes from quechua *aya* ("death, the dead, spirit"), and *huasca* ("vine"), that is the spirit leaving the body without the body dying. It is used in countries such as Ecuador, Peru and Colombia for

Shamanistic and medicinal purposes. It is a drink made by cooking multiple plants. The principal plant is the *banisteriopsis caapi*. It contains monoamine oxidase inhibitors, which sometimes is the only ingredient. However, it is frequently accompanied by *psychotria viridis*, or *cabrerana*, the latter providing dimethyltryptamine or DMT. DMT produces alterations in the perception of images that swift quickly. This substance is only active when associated to MAIOs and is present in very small amounts. DMT is normally degraded by MAO in the liver and intestine, so that the only way it is active in the body is when taken with a MAIO.<sup>27</sup> The result is a pharmacologically complex beverage having limited toxicity used for medical and/or religious rituals and in traditional medicine of the native Amazonian populations. The principal properties are sedatives and hallucinogenics and it has been used to treat personality problems and even schizophrenia. The study of the psychosis produced by ayahuasca, specifically the effect of DMT, has been used to study in greater depth the etiology of the hallucinations. It is believed that in the brain, a chemical reaction is produced, transmethylation, by which certain neurotransmitters are transformed into chemical substances that are capable of inducing hallucinations. These methylated compounds are found in the urine of psychotic patients.<sup>28</sup> Substances have been found in the urine of the subjects who consume ayahuasca that are similar to those found in patients with non-drug related psychosis, such as DMT.<sup>29</sup> Furthermore, there is a reduction of the activity of the monoamine oxidase, so that the psychotoxic substances accumulate more easily. For the dose to be lethal in humans, it must be twenty times greater than that used in the ceremonies. In spite of this DMT can cause unpleasant psychological reactions and even transient psychotic episodes, which resolve in hours. It seems that there is no risk of abuses or dependence.<sup>30</sup> On the physical level, intake of ayahuasca may cause nausea, diarrhea, mydriasis, tachycardia and hypertension. Different organizations have requested that it be considered as patrimony of humanity due to its effects such as that of increasing empathy, as a stimulant and as an antidepressant.<sup>31</sup>

The ceremonies of ayahuasca are done at night and can last about four hours. During this ceremony, the Shaman recites some songs and then gives the sacred substance to be drunk. Those who participate in the ceremony consider that it opens a connection with the spirituality that lasts the entire life. This sensation can be achieved from the first session. The challenge of the person is to understand the real meaning of the visions shown by the Ayahuasca plant and to use this learning in their daily life. Without additives, intoxication with ayahuasca may be pleasant. It produces luminous visions when your eyes are shut after a period of vertigo, nervousness, profound transpiration and sometimes nausea. During a stage of lassitude, the colors play colors. In the beginning white. Then a diffuse smoky blue that increases in intensity little by little and finally, there are

those who go to sleep, although with interruptions from dreams and fever. The most violent and frequent effect after the intoxication is significant diarrhea. When tryptamines are added, many of these effects intensify. Palpitations, convulsions, mydriasis and tachycardia also appear. Advanced states of intoxication are announced when severe aggressivity is seen.<sup>7</sup> Using ayahuasca in combination with some drugs, especially selective serotonin reuptake inhibitors (SSRI), may cause a serotonergic syndrome.<sup>32</sup>

Growing or consuming lianas is not penalized, but DMT consumption is forbidden, although its concentration in ayahuasca is so small that it is not subject to the table of penalties. Regarding the consumption of the drink by pregnant women or children, the Brazilian government has considered, as an exercise of the official powers, that is, the government guarantees the right to use it during the rituals in these groups of population.<sup>33</sup>

## CONCLUSION

Through the first documents and paintings, we know that man has always sought spirituality. To achieve this, almost all the cultures have used psychedelic drugs. Some of them are practically harmless, such as ayahuasca, but others on the other hand are extremely toxic, such as amanita muscaria or LSD. The artificial production of phenomena such as depersonalization or derealization and the appearance of psychotic semiology have been pursued by the human being with mystical - medicinal purposes. Currently, the use of these substances with spiritual purposes is in disuse, except in the indigenous populations of Central America

The consumption of herbs and mushrooms with hallucinogenic properties has extended throughout Europe for illegal recreational use, not exempt from risk due to their potential neurotoxic effects. Although uncommon, intoxication by these drugs must be taken into account when making the differential diagnosis in acute psychotic pictures and, definitively, when there are exceptional states of consciousness.

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