

Salvia divinorum - Diviner's Sage

- Labiatae - Oaxaca, Mexico



Ethnopharmacology of *Ska María Pastora*

by Leander J. Valdés III, José Luis Díaz* and Ara G. Paul

Summary

Salvia divinorum is a perennial labiate used for curing and divination by the Mazatec Indians of Oaxaca, Mexico. The psychotropic effects the plant produces are compared to those of the other hallucinogens employed by the Mazatecs, the morning glory, *Rivea corymbosa* L., Hallier F. and the psilocybin-containing mushrooms. A discussion of the role of *ska María Pastora* in the "native pharmacopoeia" is based on previous reports and fieldwork by the authors with a Mazatec shaman.

Introduction

Salvia divinorum (Epling and Játiva-M.) is a perennial herb in the Labiatae (mint family) native to certain areas in the Sierra Mazateca of Oaxaca, Mexico (Fig. 1). It is one of about 500 species of *Salvia* in the New World subgenus *Calosphace* (Epling and Játiva-M., 1962). The plant grows in large clones to well over 1 m in height and its large green leaves, hollow square stems and white flowers with purple calyces are characteristic taxonomic features. This sage has been found only in forest ravines and other moist humid areas of the Sierra Mazateca between 750 m and 1500 m altitude (Díaz, 1975a). Carl Epling, who first described *S. divinorum*, reported the flower as having a blue corolla, and it has been illustrated this way in the literature (Epling and Játiva-M., 1962; Schultes, 1976). However, this description has been shown to be an error, as all living specimens of the plant have had blossoms with white corollas and purple calyces (Díaz, 1975a; Emboden, 1979).

S. divinorum is one of several vision-inducing plants employed by the Mazatec Indians, one of the native peoples living in the mountains and upland valleys of northeastern Oaxaca. Unlike other Mexican tribes, there is little information concerning their existence before the arrival of the conquering Spanish, who reduced the Mazatecan population through exploitation and disease (Weitlaner and Hoppe, 1964). The 1970 census estimated their number at 92,540 (Córtes, 1979) and the language, of the Mazatec-Popoloca family, is one of the many non-Spanish dialects spoken throughout Mexico (Weitlaner and Hoppe, 1964). The Mazatecan ritual use of hallucinogens, such as mushroom containing psilocybin and morning glory seeds containing lysergic acid amide, has been widely publicized through the investigations of R. Gordon Wasson and Albert Hofmann, among others (Wasson and Wasson, 1957; Wasson, 1963; Hoffman, 1964; Hoffman, 1980).

Review of literature

Although the use of the mushrooms and morning glories was documented by

the Spanish *conquistadores* and chroniclers who arrived in Mexico during the Sixteenth Century (Wasson, 1963), the literature on *S. divinorum* is relatively recent. Wasson originally proposed that this *Salvia* was the plant known to the Spanish by the Nahuatl (Aztec) name of *pipiltzintzintli*, but new investigations suggest that the Mexican name probably refers to *Cannabis sativa* L. (Díaz, 1979).

There are a number of common names for *S. divinorum* and nearly all are related to the plant's association with the Virgin Mary. It is known to the Mazatecs as *ska María* or *ska Pastora* and the sage is also known by a number of Spanish names including *hojas de María*, *hojas de la Pastora*, *hierba (yerba) María* or *la María*. The Mazatecs believe this *Salvia* to be an incarnation of the Virgin Mary, and care is taken to avoid trampling on or damaging it when picking the leaves, which are used both for curing and in divination (Fig. 2).

Attempts at the identification of *ska María Pastora* were carried out in conjunction with anthropological expeditions led by one of Mexico's leading anthropologists, the former Austrian engineer, Roberto G. Weitlaner, who rediscovered native use of hallucinogenic mushrooms among the Mazatecs in 1936 (Wasson, 1963). On a field trip in 1938, Weitlaner's future son-in-law, the American anthropologist, Jean B. Johnson learned that the Mazatecs employed a "tea" made from the beaten leaves of a "hierba Maria" for divination. The preparation was used in a manner similar to the "narcotic" mushrooms and the *semillas de la Virgen*, which were later identified as morning glory seeds (Johnson, 1939). Blas P. Reko, who knew Weitlaner well, referred to a "magic plant" employed by the Cuicatec and Mazatec Indians to produce visions. It was known as the *hoja de adivinación* (leaf of prophecy) and although Reko could not identify the plant, it was probably *S. divinorum* (Reko, 1945).

In 1952 Weitlaner reported the use of a *yerba (hierba) de María* by the Mazatecs in Jalapa de Díaz, a small Oaxacan village. According to his informant the leaves of this plant were gathered by *curanderos* (shamans or healers), who went up into the mountains and harvested them after a session of kneeling and prayer. For use in "curing" the foliage was rubbed between the hands and an infusion of from 50 to 100 leaves was prepared, the higher dose being used for alcohol "addicts". Around midnight the *curandero*, the patient and another person went to a dark quiet place (perhaps a house) where the patient ingested the potion. After about 15 min the effects became noticeable. The subject would go into a semi-delirious trance and from his speech the *curandero* made a diagnosis and then ended the session by bathing the patient in a portion of the infusion that had been set aside. The bath supposedly ended the intoxicated state. In addition to such "curing", the *yerba María* also served for divination of robbery or loss (Weitlaner, 1952).

Five years later the Mexican botanist, A. Gómez Pompa, collected specimens of a *Salvia* known as "xka (sic) Pastora". He noted that the plant was used as an hallucinogen (*alucinante*) and a dose was prepared from 8 to 12 pairs of leaves. Since flowering material was not available, the sage could not be identified past the generic level (Gómez Pompa, 1957). The holotype specimen of *S. divinorum* was acquired by Wasson and Hofmann in 1962 while they were traveling with Weitlaner. Flowering plants were brought to them in the village of San José Tenango, as they were not permitted to visit the locality in which *ska María Pastora* grew. This collection was sent to Epling and Játiva-M. who described it as a new species of *Salvia*, *S. divinorum* (Wasson, 1962; Epling and Játiva-M., 1962).

Wasson was the first to personally describe the effects of *ska Pastora*, relating the experiences he and member of his party had on ingestion of different doses of a beverage prepared from the plant's foliage. At a session in July 1961 in which he participated, a *curandera* (female shamans are very common among the Mazatecs and other Mexican peoples) squeezed the juice of 34 pairs of leaves by hand into a glass and added water. Wasson drank the dark fluid and wrote that although the effects came on much faster than those of the mushrooms, they lasted a much shorter time. He saw only "dancing colors in elaborate, three-dimensional designs" (Wasson, 1962). Summing up the experience, he later stated (pers. comm):

A number of us (including me) had tried the infusion of the leaves and we thought we experienced something, though much weaker than the *Psilocybe* species of mushroom.

Hofmann and his wife, Anita, who accompanied Wasson on an expedition the following year, took an infusion prepared from five and three pairs of *S. divinorum* leaves, respectively. Mrs. Hofmann "saw striking, brightly bordered images" while Hofmann found himself "in a state of mental sensitivity and intense experience, which, however, was not accompanied by hallucinations" (Hofmann, 1980).

María Sabina, the Mazatec shaman made famous by Wasson, and who lives in the Mazatec highland town of Huautla, in Oaxaca, briefly mentioned her use of the plant in her autobiography (Estrada, 1977):

If I have a sick person during the season when the mushrooms are not available, I resort to the *hojas de la Pastora*. Crushed (*molido*) and taken, they work like the "children" (i.e., the mushrooms). Of course, the *Pastora* doesn't have as much strength.

Roquet and Ganc reported that the Mazatecs prepared a dose of *S. divinorum* from 120 pairs of crushed leaves and used the plant only when the mushrooms and morning-glory seeds were not available. Roquet and his associates used the plant twice in their psychiatric investigations of Mexican hallucinogenic plants and stated that they had difficulties in working with it (Roquet, 1972).

José Luis Díaz and his coworkers studied the use of *ska María Pastora* in the Mazatec highlands during the 1970's. Díaz himself took the *Salvia* infusion under the supervision of a shaman, Doña J., on six different occasions, noting an increased awareness of the plant's effects each time. The first changes he perceived were a series of complex and slowly changing visual patterns that occurred only in complete quiet with closed eyes. There were no colored geometric patterns which characteristically occur with ingestion of other hallucinogens nor were there auditory images. After a short time he noticed peripheral phenomena, such as a feeling of lightness in the extremities and odd sensations in the joints. The climax of effects, accompanied by dizziness or nausea (*mareo*), lasted about 10 min and disappeared about 0.5 h after ingestion of the infusion. Other, more subtle, effects seemed to persist for a few hours (Díaz, 1975a).

Hofmann (Hofmann, 1964) and Díaz (Díaz, 1975a) each investigated *S. divinorum* chemically without isolating and identifying any active principle. As noted above, the descriptions in the literature emphasize the mildness of the

plant's effects. There are many ways to achieve visions other than by ingestion of classically defined "hallucinogens" such as mescaline, LSD and psilocybin. Among these are meditation, prayer, mental illness, disease (especially when accompanied by fever), poisoning, experiences of dying, and suggestion (placebo effect). Therefore, prior to conduction chemical and animal studies, we decided to attempt to clarify the role of *S. divinorum* as a vision inducer among the Mazatec Indians.

Mazatec healing

The following report is based on fieldwork with a Mazatec *curandero*, or healer, living near the Alemán Reservoir in the Mexican state of Oaxaca, about 100 km from the port of Veracruz. Although a study based on information from a single source is open to criticism, the jealous and secretive nature of native shamans works against statistical methods of survey. Visiting many shamans in a single are can actually lessen the amount of information gathered, as each *curandero* may fear the visitor is telling their secrets and giving their "power" to a rival. To them magic can hurt or kill. Wasson and Richard E. Schultes have both commented on the difficulty of making contacts with the *curanderos* of this region (Wasson and Wasson, 1957; Schultes, 1941).

Don Alejandro, the informant, spoke only a Mazatecan dialect. One of his sons served as an interpreter, translating from the native tongue to Spanish. The information they provided the authors was gathered in fragments over many visits during the summer of 1979 and spring of 1980.

Mazatec healing and religion are united in a manner common to traditional cultures. This is somewhat foreign to western scientific medicine which is isolated from religion except for the times when it no longer serves to cure. A brief description of Mazatec healing, based mainly on the work with Don Alejandro should help to explain the use of *ska María Pastora* and its relationships to other healing plants. The Mazatecs (the name, taken from the city of Mazatlan was actually imposed on the natives by the Spanish) are nominally Catholic Christians, but they have incorporated many features of their traditional beliefs into their conceptions of God and the Saints, whom they consider to have been the first healers. The most prominent among them is San Pedro, or Saint Peter, who is said to have cured a sick and crying infant Jesus through the ritual use of tobacco (*Nicotiana* spp.). Tobacco is considered to be a health problem in the United States and many other countries, and its acute pharmacological effects are due to the alkaloid nicotine (Larsen et al, 1961). Yet for the Mazatecs, as well as for almost all Mesoamerican Indians, it is the most important curing tool in the "pharmacopeia". The fresh tobacco leaf is dried, ground and mixed with lime to form a powder known to the Mazatecs as San Pedro (Saint Peter); the "best" is prepared on the Saint's day, June 29th (Incháustegui, 1977). The preparation is more familiarly known by its Nahuatl name *picietl* (*piciete*). It is worn in charms and amulets as a protection against various "diseases" and witchcraft, but its most important use is in *limpias*, or ritual cleansings. It may be used alone with a prayer and *copal* (an incense prepared from the resin of *Bursera* spp.) (Díaz, 1975b), or in conjunction with such herbs as basil (*Ocimum* spp.) or marijuana (*Cannabis sativa*)*, eggs, or various other substances. Anyone who comes to Don Alejandro to be treated usually gets a *limpia*. This ritual cleansing may be the cure itself, or it may be accompanied by other "medicines". The patient is given a pinch of the San Pedro powder (wrapped in paper) to carry with them and use during the healing period.

*Don Alejandro does not use marijuana, as it is illegal.

One learns to become a shaman through an informal apprenticeship, although the Mazatecs will insist they are taught by a progression of visions from and of heaven, rather than by people. Psychotropic plants are intimately associated with this training, which can last up to two years or longer. In this area of Oaxaca, as well as the highland region visited by Díaz, the vision inducers are taken systematically at intervals of a week to a month. Once one becomes a healer the hallucinogenic plants are ingested much less frequently. The process begins by taking successively increasing doses of *S. divinorum* for a number of times to become acquainted with the "way to heaven". Next comes mastery of the morning glory (*Rivea corymbosa* (L.), Hallier, f.) seeds and finally one learns to use the sacred mushrooms. There is a rigid *dieta*, or diet, to follow during this time. "Hot" foods such as garlic and chili peppers are restricted and there must be abstinence from sex and alcohol for extended periods. However, many Mazatec shamans incorporate alcohol into their training and drink during their ceremonies (Wasson and Wasson, 1957). Breaking from this *dieta*, or ritual diet, could make one crazy according to Don Alejandro and since such obligations require maturity, one should be at least 30 years old before becoming a *curandero*.

A comparison of Mazatec hallucinogen

Ska María Pastora is, pharmacologically, the weakest of the three hallucinogenic plants. Following its ingestion the Virgin Mary is supposed to speak to the individual, but only in absolute quiet and darkness. The relatively mild experience is readily terminated by noise (such as a loud voice) or light. Don Alejandro says the effects of *tu-nu-sho*, the flower seeds (*R. corymbosa*), are similar to the of the *María* (*S. divinorum*) as both plants are siblings (*son hermanos*) under the protection of the Virgin Mary and San Pedro. A "dose" he provided weighed 9.6 g and consisted of about 350 *R. corymbosa* seeds. A brief report on another morning glory (*Ipomoea purpurea* Roth) noted that ingestion of a large number of seeds produced effects similar to LSD, but with an additional narcotic component characterized by drowsiness and torpor (Savage et al., 1972). Humphrey Osmond also noted a narcotic effect on dosing himself with *R. corymbosa* seeds (Hoffer and Osmond, 1967). The activity of morning glories appears to be due to d-lysergic acid amide (ergine) and related alkaloids (Schultes and Hofmann, 1980). Interestingly, the authors discovered a woodrose (*Argyreia* spp.) growing in the vicinity of the village where Don Alejandro lived. *Argyreia* spp. contain LSD-like compounds (Chao and der Marderosian, 1973). When asked whether he used the plant, Don Alejandro said that he did not, since it caused people to become crazy. The curandero also had several horticultural specimens of *Coleus* spp. growing near his house. Wasson has noted that the Mazatecs believe *Coleus* to be a medicinal or hallucinogenic herb related to *S. divinorum* (Wasson, 1962). However, Don Alejandro said the plants were not medicinal and his daughter had bought them at the market because they were pretty.

According to Don Alejandro *ni-to*, or the mushrooms-that-one-takes (*hongos para tomar*, probably not a literal translation, see Wasson, 1980) are unlike the other two plants. The fungi are *delicado* (delicate), *nervioso* (nervous), *una cosa de envidia* (a thing of envy). Unfortunately the English translations of these terms do not convey the Indian-Spanish concept of magic that has a dangerous and sinister side. Santa Ana and San Venanzio, the Saints the *curandero* associates with the mushrooms, were not as good at healing as San Pedro and the *Virgén María*, the patrons of the *Salvia* and the morning

glory. Eating too many of the fungi can "leave one crazy" and the visions are often *trucos* (tricky). Other Mazatec informants have attributed such characteristics to the visions, saying that one has to separate the true from the false (Incháustegui, 1977). Wasson has reported that misuse of the mushroom can lead to madness (Wasson and Wasson, 1957). Munn and Wasson have given complementary descriptions of shamanic use of mushrooms among the Mazatecs (Munn, 1979; Wasson, 1980). Psilocybin and psilocin, the vision-inducing compounds in the fungi, were isolated by Hofmann, who used himself as a subject for their activity. He reported that a dose of 2.4 g of dried *Psilocybe mexicana* Heim (an average amount for a *curandero*) produced effects he could not control or resist. A colleague "was transformed" into an Aztec priest and at the height of the experience Hofmann felt he "would be torn into this whirlpool of form and color and would dissolve" (Hofmann, 1980). This experience was quite unlike the mild one produced by *S. divinorum*. As Don Alejandro stated it, "The María, on the other hand accepts you (*la María, en cambio, te acepta*)."

Remedial uses of *S. divinorum*

From the shaman the investigators learned that the plant could be used as a "medicine" as well as for the induction of visions. A low dose serves as what the investigators interpreted to be a "tonic " or "panacea" as well as for "magical" healing (Don Alejandro did not use such terms). An infusion prepared from 4 or 5 pairs of fresh or dry leaves may be taken by the glass (*vaso*) or tablespoonful (*cucharada*) as needed. It is used to cure the following "illnesses", although there may be other possible uses:

1. It helps one defecate and urinate. It stops diarrhea (the plant apparently is believed to regulate eliminatory functions).
2. It is given to the sick, old or dying to revive them or alleviate their illness. People who are pale, white and almost ready to die (they have "anemia") may recuperate on taking *la María*.
3. It may be taken to relieve headaches and rheumatism (however, when taken in the high doses that induce visions, it often leaves one with a headache the following morning, according to the *curandero*).
4. There is a semi-magical disease known as *panzon de barrego* (sic), or a swollen belly, which is supposedly caused by a curse from a *brujo*, or evil sorcerer. The victim's midsection swells up due to a "stone" that has been put inside them. Taking the *Salvia* causes elimination of this "stone" and the belly shrinks down to size. The researchers met an old shaman who showed them his wrinkled middle and said he had cured himself of the "disease" by the use of "*la María*". Don Alejandro confirmed the "illness" and the "cure".

Divination with *S. divinorum*

S. divinorum may be prepared as an infusion from 20 (about 50 g) to 80 (about 200 g) or more pairs of fresh leaves to induce visions and may be taken by the *curandero*, the patient (or apprentice) or both, depending on the situation. Only fresh foliage will serve for divination. At this dosage level, the *Salvia* is used to foretell the future, find the causes and cures of illnesses and obtain answers to questions about friends, enemies and relatives. In shamanic training, the future healer takes *la María* to learn the ways of healing and the identification and use of medicinal plants (there is supposedly a tree in Heaven with all such herbs in it and one talks to God and the Saints about them under the influence of the hallucinogens). After preliminary

sessions in the company of the master, who takes the infusion along with the apprentice to watch him on the journey, the future healer may continue to study on his own until it is time for the next plant in the series. Don Alejandro told the investigators that the *Salvia*, the morning glory seeds and the mushroom each told their own *historia* (story or history) and *ska María* was the best teacher of the ways of curing, as one learned the most from it. During the course of the visits, the researchers were able to participate in two sessions under the shaman's guidance. As the hallucinogens are never taken without a valid purpose and since the researchers were from "the University", the ceremonies were oriented to teach them about healing and especially the uses of the *María* and other medicinal plants. Don Alejandro said they would have to follow the *dieta*, or ritual diet for 16 days, although they could bathe and drink beer (after the first time, the *dieta* for *S. divinorum* is only 4 days in length).

The preparations for the two ceremonies were essentially the same. As Dark came (about 19:30 to 20:00 h) the *curandero* began making the *Salvia* infusion. The leaves were first counted out in pairs to arrive at each person's dose and put neatly into piles with their petioles aligned. Then Don Alejandro picked up part of a pile and crushed it by hand into a small bowl partially filled with water (Fig. 3). As more foliage was squeezed and added, the liquid turned dark green from the chlorophylls. After the potion was prepared, it was poured through a sieve into a glass which was topped off with water (Fig. 4). During the preparations for the second session a head of foam formed on the glasses and the *curandero* laughed. He explained through his son that the foam (*espuma*) was an indication of strength and the *María* would be very potent that evening. The glasses were covered with inverted cups to "prevent the escape of the humor (*que no salga el humor*)". Although the foliage of *S. divinorum* could reportedly be kept fresh for a week or longer when wrapped in the large leaves of *Xanthosoma robustum* Schoff, the prepared infusion was said to be stable for a day. The spent leaves were set aside to be discarded in an out of the way location where they wouldn't be defiled by people or animals. However, Don Alejandro said they could still be used by putting them on a subject's head to refresh them after the session. The *curandero* picked up a glass of the *María* and began an oration. The Holy Trinity, Saint Peter, the Virgin Mary and other Saints were called on to watch over the participants and teach the visitors the ways of curing:

In nomine Spiritu Santo (this "Latin" phrase was always translated into the vernacular as:
In the name of the Father, the Son and the Holy Ghost) Most
Holy Lord Saint Peter
In the name of Leandros (the subject)

In nomine Spiritu Santo
María, show Leandros,
that he may see what there is in the world
For he wishes to study all the classes of medicines
Lord Jesus Christ, show him
May he learn
May he see all the classes of medicinal plants
You, who know all, show him
I want you to show him all the different kinds
of illnesses and remedies that exist in the world

In a short time he must learn your story

In nomine Spiritu Santo

Most Holy sainted Rosary

Set him free, that he may see it

Show him as you have shown me

May he recognize all that is the Universe

All that is your History

He wishes to learn out of love and sincerity

I want you to show him, as I am asking your favor

You, *María* and Lord Jesus Christ, amen

If there is bad or good, save him

Help him out of sincerity or love

In nomine Spiritu Santo

Most Holy Lord Saint Peter

You, too, *María*, show him

Set him free that he may see it

Do not be deceptive

This day, on this very date

he is going to take it (the *Salvia* infusion)

In nomine Spiritu Santo

Most Holy Lord Saint Peter

Help this Leandros

May he grow more

May he learn things

Show him all that there is in the world

All that is good

All that is medicinal

In nomine Spiritu Santo

Most Holy Lord Saint Peter

Lord Saint Anthony, Lord Saint Peter, Jesus Christ

You are the only three who know about *la María*

You must show him all that is medicinal

All that is the Universe

All that is your History

Show him, do not be bad

In nomine Spiritu Santo

Holy Sanctuary, Lord Santa Ana

You who are good, You must help him

so that he becomes acquainted with our Universe

You must teach him what I ask

so that it will be to the Lord Saint Peter's pleasure

Let Leandros take it (*la María*)

In nomine Spiritu Santo

Most Holy Lord Saint Peter

Two to four hours passed in conversation and telling of stories. The shaman repeatedly emphasized that it was important to describe one's visions, "If you are going to learn or if you are going to understand what it is all about, you must speak." Finally it was time for ingestion of the infusions (between 21:00 and 23:00 h). Following Mazatec custom, at least one person didn't participate, in order to watch over the rest (Wasson et al., 1974). As a last

protection against any dangers during the visionary "travels", Don Alejandro performed *limpias*, or ritual cleansings on the visitors (Fig. 5),

In nomine Spiritu Santo
Most Holy Lord Saint Peter
This is a *limpia* for Leandros (subject)
Arise, listen, as it is now the time

In nomine Spiritu Santo
Most Holy Lord Saint Peter
I ask Your favor for Leandros
Heal him, care for him
For I am going to cleanse him now
Help him at this moment that he may be cleansed
Strike out the bad illnesses that he may have
Lord (Saint Peter) attend him
That he may see the Universe
What there is in the world
Everything
Help him, raise him
May he see what there is
All that he wishes to know
Save him, care for him

In nomine Spiritu Santo
Most Holy Lord Saint Peter
Reclaim this man
That he live well, live better
For this man is known by all the children of God
Heal him, as you will
Heed his messages the moment you heal him
Take care of him, help him
That is what I am saying

In nomine Spiritu Santo
Most Holy Lord Saint Peter
Lord Jesus Christ
You know how to save him, how to cleanse him
Cure him, no matter what badness has fallen on him
Heal him, care for him
I want You to heal him and save him from all bad things
Being in my hands, I can help him,
having faith and will.

In nomine Spiritu Santo
Most Holy Lord Saint Peter
Sainted trinity, care for him
Help him, let no evil befall him

As the oration was being recited, Don Alejandro anointed the subject with a piece of *copal* dipped in the San Pedro. The *Curandero* then gave him a pinch of the San Pedro to carry for protection if he felt danger during or after the session. After a final benediction (Fig. 6), the potions were drunk and the light was turned out.

Session 1, August 18, 1979

The participants were Díaz, Valdés and Don Alejandro, who sat on a bench and watched over the others during the proceedings. The *curandero* and Díaz, who had taken *la María* several times previously, each had doses prepared from 50 pairs of leaves. Valdés received a beginner's dose prepared from 20 pairs. They took the *Salvia* preparations around 22:30 h. The visitors shared a large cot while the shaman lay on a *petate*, or sleeping mat which was unrolled on the floor.

Díaz sat quietly on the side of the cot after the lights went out. About 15 min after ingestion of the infusion he began to see subtle visions, constricted like columns of smoke in the total darkness. It made no difference whether his eyes were opened or closed. Deciding to speak out, he saw a light which disappeared as he began to describe it. The images increased in intensity. He saw a large mountain made of ice, as though he were at the base of a cliff formed from large ice columns. The vision slowly changed into Cerro Rabón, a nearby mountain intimately associated with Mazatec legends (Incháustegui, 1977). About 2300:h the flow of images changed into lights of various shades of blue, indigo and purples, scattered as if in a spatial vacuum. Depending on his perspective, he was either traveling through them or else they were being projected toward him. He saw a cross being encircled by a light and a mantle. As he described the imagery in words, it seemed to be fixed more clearly in his memory and he felt it would aid in later recall of the experience.

Some 45 min after the lights went out, Don Alejandro began to speak in a monotone. His son did not interrupt to translate from the Mazatec. As the shaman spoke, Valdés (who had only experienced a few brief visions which he hadn't described) saw a black sky with brightly-colored objects floating in it. He suddenly found himself speeding toward one and actually felt he was accelerating through space past the rest. The light turned out to be a Mazatec village similar to that of the *curandero*. Valdés saw it from above, as if he were on a hill. Shapes, like kaleidoscopic pillars of smoke, were at the sides of some of the houses. Then he was suddenly in space, receding away from the vision.

Don Alejandro stopped speaking, turned on the light and went out to look for a "spy" he had heard outside the house. He found nothing, but forced himself to vomit, which he said would end his visions. The session had lasted about 1 h, and the following hour was spent in discussion of what had been seen. The *curandero* told the two visitors that he had watched over them during the session and ascertained what they needed to know. The old man said that after a few more experiences Díaz would learn to heal and use the medicinal plants. He mentioned a woman, a doctor like Díaz, who would try to interfere with or get involved in his work. Don Alejandro emphasized to Valdés, who had remained quiet throughout the night, that it was necessary to speak out about the visions and he would need many sessions before he would learn how to heal. Everyone then went to sleep and rose early the next morning.

Session 2, March 6, 1980

During this much less formal session Díaz and Valdés took the infusion of *S. divinorum* and were monitored by Don Alejandro and his son, as well as by Paul, who tape recorded events throughout the afternoon and evening. The researchers arrived at the village around 17:00 h and the shaman spent the entire afternoon and early evening talking with them about his visions of "Heaven" and the office (*escritorio*) he had there, near God and Jesus. He recounted many tales and legends, including one about the origins of healing. It was a very enjoyable afternoon which provided an excellent set and setting (Weil, 1972) for the visitors' experience with *la María*.

Díaz and Valdés received infusions prepared from 60 and 50 pairs of fresh *S. divinorum* leaves, respectively. They drank the prepared potions at 21:00 h and lay down in Don Alejandro's bedroom while the *curandero's* son and Paul sat on a bed next to them. Don Alejandro remained in the other room. The two researchers spoke in turn and were questioned by the younger Mazatecan whenever there was a lull in their speech:

Paul - Nine o'clock, Leander and José Luis are drinking (the *Salvia* infusion)...
----- (indicates a pause in the recording)

Díaz - *Nueve doce* (he looked at his lighted watch). *Empiezo a sentir algunos de los, de los efectos de la planta. Me siento muy relajado. Y he tenido en los últimos momentos muchas imágenes de plantas y flores. Mucha, muchos tipos de flores diferentes... algunos de ellos desconocidos para mí... De muchos colores. Siento mi cuerpo muy suave, como ligero. En los últimos momentos empezaba a se... a ver algunas imágenes como puntos de luz.* (Nine-twelve. I am beginning to feel some of the, the effects of the plant. I feel very relaxed. And I have had, in the past minutes, many images of plants and flowers. Many, many different kinds of flowers... some of them unknown to me... Of many colors. My body feels very mellow, as if it were light. In the past moments I began to see some images like points of light.) That's all for now.

Valdés - ...plants and flowers. I think they were what people call eidetic images, 'cause I saw them when I first closed my eyes. They've disappeared. I feel like I'm being twisted around inside of my body. Very, very strange sensations, like I'm being... twisted. Boy, like I'm spinning.

Díaz - *Nueve veinte. Las... la sensación de ligereza del cuerpo es más intensa. En un momento dado sentá como... como que sea (¿quisiera?) atravesar a un techo y las imágenes de plantas han cambiado y ahora he tenido sensaciones como estar flotando en la noche llena de estrellas y me doy cuenta que no es... no es fácil (dog barks) tener... de que no es fácil tener la fe que se (dog), que se nos pide. Que se me pide. Me siento muy... muy, como muy emocionado. Todas estas cosas (dog). Es todo por ahora.* (Nine-twenty. The... the sensation of lightness of the body is more intense. In a given moment I feel as though... as though I were floating through a roof and the images of plants have changed and now I have had sensations like floating in the night full of stars and I realize that it isn't... it isn't easy to have... that it isn't easy to have the, the faith that he... that he asks of us. That he asks of me. I feel very... very, like very moved. All these things. That's all for now.)

Son - ¿José Luis?

Díaz - ¿Sí? (Yes?)

Son - ¿Ya no ve más imágenes(sic)? (Do you see any more images?)

Díaz - *Sí, un poco. Tengo algunas más, pero no ha sido muy... muy intenso, ¿no? He visto... como si estuviera flotando en el cielo, como si hubiera entrado a... a... pues, como a una gran nave o algo así. Y... y como si fuera las cosas muy mecánicas adentro como una máquina... muy precisa e (sic) muy geométrica. Y en... y curiosamente, como si en algunos casos hubiera otra vez flores dentro de este lugar. Y volví otra vez a ver como muchas flores, pero como si fueran mecánicas, como si no fueran de... de verdad.* (Yes, a little. I have seen more, but it has not been very intense, no? I have seen... as though I were floating in the sky, as though I had entered a large boat, or something like that. And.. and as if all the things inside were very mechanical like a machine that was very... very precise and geometric. And in... and curiously, as if in some cases there were again flowers inside the place. And again I began to see like many flowers, but as if they were all mechanical, as if they were not... real.)

Son - *Cristo? ¿No lo viste?* (Christ? Didn't you see him?)

Díaz - *Pues... no. A veces me acordé de él, pero no, no sé presentó en una imagen, ¿no? A veces también pensé en unas imágenes de las que nos dijo..., nos dijo Don Alejandro. De los escritorios y... Pero, pero nada más.* (Well... no. At times I thought about him, but he didn't appear as an image, no? At times I thought about some of the images which... which Don Alejandro described to us. Of the offices and... But, but nothing else.)

Son - *No te enseñaron completo.* (They didn't show you everything.)

Valdés - ...down. It's very hard for me to talk. Like something's pushing me down into the bed. My arms are very, very sore. (Dog barks) I see things, but there's no, no (lost to dog barking). They just overwhelm me. Very hard to describe. I see things that look like fruits. Very strange, I can see the seeds. I can see the (dog barks) oranges and yellows and colors. Strange. Like giant fruit.

Son - *¿Qué dice Leandros? ¿Qué fué lo que vi (sic)?* (What is Leandros saying? What did he see?)

Díaz - *Dice que le cuesta... le cuesta más trabajo hablar. Que siente su cuerpo muy pesado* (dog barks throughout this section of the recording). (He says that it is hard... it is hard for him to talk. That his body feels very heavy.)

Son - *Mm-hmm.*

Díaz - *Que los imágenes no son.. son sutiles, ¿no? No son muy... no son muy intensas, ¿no?* (dog continues). *A veces logra... logra a ver algunos colores. Describe algunas flores, y como frutos.* (That the images are not... they are weak, no? they aren't very... they aren't very intense, no? At times he succeeds... he succeeds in seeing some colors. He describes some flowers, and like fruit.)

Son - *Sí.*

Díaz - *Pero no hay... no hay imágenes así que son muy... muy...* (But there aren't... there aren't images that are very... very...)

Valdés - *Hay muchas de semillas, ¿no? Esas... de melones, ¿no?* (There are many of seeds, no? Those of melons, no?)

Son - *Sí.*

Díaz - *¿Se sie... te sientes muy contento, no?* (You fee... You feel very content, no?)

Valdés - *Muy pesado* (sic). (Very heavy.)

Son - *¿No viste algo más?* (Didn't you see anything else?)

Valdés - *Cosas, pero no puedo describerlas* (sic; sounded somewhat intoxicated at this time.) (Things, but I can't describe them.)

Valdés - *... parece que está quemando, ¿no? Que tiene dos rayas* (cross with two arms) *en vez de una, ¿no?* (...it seems to be burning, no? That it has two rays instead of one, no?)

Son - *Mm-hmm.*

Valdés - *Pa'ece* (*parece*) *este tiene fuego.* (This thing seems to have fire.)

Son - *Mm-hmm.*

Valdés - *Que hay como un cuerpo envuelto* (dog barked throughout). (That there is like a wrapped body.)

Son - *Mm-hmm.*

Valdés - *... de cruz* (dogs barked throughout). *Ya, ya había muchas cosas pero ya están des'pareciendo. Todo está como un* (lost to dogs) *muy negra.* (...of a cross. Now, now there were many things but now they are disappearing. Everything is like a very black...)

Son - *Sí*

Valdés - *Parece como una pintura, pero todo en blanco y negro.* (It looks like a picture, but everything in black and white.)

Son - *Mm-hmm.*

Díaz - *Ví... ví que con la flor de la... de la... de la semilla de la Virgen. Bastante claramente con su color morado. I... Ipomoea violacea, ¿no? Yo tengo muchos, muchas imágenes si... si me fijo en ellas, ¿no? Se mueven bastante, ¿no?* (I saw, I saw something like the flower of the... the flower of the... of the seed of the Virgin. Quite clearly with its purplish color. *I... Ipomoea violacea*, no? I see many, many images if... if I concentrate on them, no? They move a lot, no?)

Son - *Sí.*

Díaz - *Pero la... el estado de estar muy contento ya hace rato ya se me quitó.* (However, the... the state of feeling content left me a while ago.)

Son - *Mm-hmm.*

(the dogs quieted down for a while)

Son - *¿Ya puede explicar mi 'apa?* (Can my father explain now?)

Díaz - *Sí. Fíjate, tenía... Creo que es... es importante también que le digas que... que no se siente mal porque, porque nosotros no... no... vemos lo que él vió...* (Yes. Look, I had... I think it is... it is also important that you tell him that... that he shouldn't feel bad because, because we... didn't... didn't see what he saw...)

Son - *Mm-hmm.*

Díaz - *...examente, porque nosotros venimos de... de una forma de... del ver el mundo... muy distinta, ¿no?* (...exactly, because we come from... from a very different manner of... of looking at things, no?)

Son - *Mm-hmm.*

Díaz - *Entonces por eso es que tenemos más dificultades para... para ponernos en... en contacto con Cristo.* (Then, because of this we have more difficulties in order to... in order to put ourselves in... in contact with Christ.)

Son - *Con Cristo* (With Christ.)

Díaz - *Y con lo Sagrado, ¿no?* (And with sacred things, no?)

Son- *Mm-hmm.*

Díaz - *Nos... nos pasan otras cosas, ¿no? O s'an (¿sean?) que no vea él qu'eso es como una falla, ¿no? De Uds. o de la planta ni mucho menos, ¿no?* (To us... to us other things happen, no? He shouldn't see this as a failure, no? Yours or even less, of the plant, no?)

Son - *Mm-hmm.*

Díaz - *Sino que nuest'a experiencia es muy distinta porque..., pues, vemos las cosas de otra forma, ¿no?* (Only it's that our experience is very different because... well, we see things differently, no?)

Son - *Sí.*

Díaz - *Es importante para él que... para Uds. que se den cuenta de eso, ¿no?* (It is important for him that... for you both that you understand this, no?)

Son - *Mm-hmm.*

Díaz *Yo me siento muy contento, ¿no? Por... por la experiencia así como está, ¿no?* (I feel very content, no? For... for the experience just as it is, no?)

Son -*Sí.*

Díaz - *Pues, nada más eso.* (Well, that's all.)

Son - *Ah-ah. ¿Tu, Leandros, ve más imagen? ¿O ya con ese es lo mucho que viste?* (You, Leandros, do you see more images? Or is that all you have seen?)

Valdés - *Veo imagenes y parecen un poco pero... como los imagenes de la iglesia pero no tienen caras, ¿no?* (I see images and they look a little but..

like the images of the church but they don't have faces, no?)

Son - Mm-hmm.

Valdés - *Tienen.. se, se ve este, los vestidos, ¿no? De, de oro y todo pero no hay imagen. No hay de caras, ¿no? Que se reconoce los...*(They have... one sees this, their clothing, ¿no? Of, of gold and everything, but there is no image. There aren't any faces, no? That one recognizes the...)

Son - Mm-hmm.

Valdés - *Tienen los manos así como... como tienen...*(lost; figures were praying).(they have their hands like this.. like the...)

Son - *¿Ese es todo lo que viste?* (Is that all you saw?)

Valdés - *Estoy viéndololo ahorita, ¿no? Ya... ya estoy viéndolo.* (I am looking at it know, no? I still.. still am looking at it.)

Díaz - *Yo sigo también viendo, si me fijo, sigo teniendo imágenes.* (I continue to see, if I pay attention, I continue seeing images.)

Son - Mm-hmm.

Díaz - *Como flores otra vez, muy luminosas, ¿no? Como si tuvieron una luz interior.* (Like flowers again, very luminous, no? As if they had an interior light.)

Son - *Sí.*

Díaz - *Creo que tiene mucho que ver con el... con el cielo que nos... que nos explicaste hace rato, ¿no? De cómo es el cielo* (I think it has a lot to do with the... with the Heaven that... that you described to us a while ago, ¿no? Of how Heaven is.)

Son - Mm-hmm.

Díaz - *Lleno de música. Lleno de flores, ¿no?* (Full of music, full of flowers, no?)

Valdés - *Ve algo ent'e... entre cruz y espada que es muy dorado, muy... tiene muchas joyas?* (I see something between... between a cross and a sword which is all covered with gold, very... it has many jewels.)

Son - Mm-hmm... *¿Sigue la imagen, todas, o ya se está allí?* (Do all the images continue, or is it still there?)

Valdés - *Si, sí, sí... sigue, sigue. Pero cambia, ¿no? Sigue y cambia, ¿no?* (Yes, yes, yes... it continues, it continues. But it changes, no? It continues and it changes, no?)

Son - *Sí.*

Valdés - *Ya es... ya es seguro que sea una, una espada... ya se des'pareció* (Now it is... now it is surely a sword... Now it has disappeared.)

Díaz - *Ya tenía como una luz... como una luz. Estas, estas flores que decía que*

tenían como una... como muy iluminados en el centro. Se ha convertido ahora como en una luz.. fuerte, ¿no? (Now I saw like a light... like a light. Therés flowers that I said had like a... like very illuminated in the middle. Now it has changed into a light... strong, no?)

Son - *Mm-hmm.*

Díaz - *Que viene como de arriba.* (Which comes as if though from above.)

Valdés - (lost to truck noise)... *es... es forma entre cruz pero tiene todo adentro. Tiene de todo... luces y animales... de... de gente, de plantas. Todo. (lost)... de muchos colores, como una pintura. Colores muy, muy vivos. De animales.* (It is... it is a shape between a cross but it has everything inside. It has everything... lights and animals... of... of people, of plants. Everything of many colors, like a picture. Very, very vivid colors. Of animals.)

Valdés - ...to collect this... this image of a cross I could seem to be able to, when I really concentrate on it, pull it back out. It disappears and recedes into things around it, and if I'd lose it in... in all the things that are happening. But if I work at it I can concentrate and bring it back. *Es que puedo... Yo, yo pierdo el imagen de la cruz. Pero si pienso en esta cosa, este que me vuelve otra vez, ¿no?* (It's that I can... I, I lose the image of the cross. But if I think about this thing, it comes back to me again, no?)

Son - *Sí.*

Valdés - *Me vuelve otra vez y puedo fijar en esto y concentrar en esto. Pero es bastante difícil. Pero que... se puede... mantener esta cosa.* (It returns to me again and I can pay attention to it and concentrate on it. But it is fairly difficult. But that... one can... maintain this thing.) I that's something about this state that you learn to work around in. Pull images out as you need them.

Díaz - ...images of... like flying from a certain... *De al... de volar como en una cierta altura. Y ten (sic) como los campos sembrados de... y llenos de plantas. Sembrados de todas las planta que producen... producen granos que se usa para comer. Campos muy bien trabaja'os* (lost to noise). (Of... of flying as though at a certain altitude. And there are fields planted with... and full of plants. Planted with all the plants that produce... produce grain that is used for food. Fields that are very well cared for.)

Valdés - *...que parece entre un castillo, o como un... una iglesia Bizantina. Estoy bastante lejos de esta cosa. No está a su lado, ¿no? No está cual (sic) debe estar. Parece un poco, ¿cómo se dice? "tilted on its side"? Estoy muy lejos y como de estoy muy arriba de esta cosa* (dog starts again) *Ya parece más como castillo. Lo veo desde del... desde muy lejos como está de allá. Como esta debajo de mí. Pero no veo nada de ge... de gente. No hay nadie. Hay banderas. De todas colores.* (...which seems to be between a castle, or like a... a Byzantine church. I'm quite far from this thing. Not at its side, no? It isn't as it should be. It seems to be a little, how does one say, "tilted on its side"? I am very far away and as though I'm very high above this thing. Now it looks more like a castle. I see it from the... from very far away as though it is from there. As though it is below me. But I don't see anybody of peo... of people. There isn't anybody. There are banners. Of all colors.)

Díaz - *es interesante. Cuando mencionaste castillo yo también empecé a ver.* (That's interesting. When you mentioned a castle I also began to see one.)

Son - *Un castillo.* (A castle.)

Valdés - *ya... ya lo veo. Veo como sombras, formas, pero no tienen... No veo caras en estas cosas, ¿no? Son como... ¿como se dice, "just covered by robes"? Hacen... y marchan pero son muy, muy serios estas cosas.* (Still... I see it. I see like shadows, shapes, but they don't have... I don't see faces on these things, no? They are like... how does one say "covered by robes"? They make... and march but these things are very serious.)

Son - *¿Es todo lo que ves?* (Is that all you see?)

Valdés - *Todavía estoy mirándolo, ¿no? Es nuevo para mí, esto. Esta cosa.* (I'm still looking at it, no? This thing is new to me. This thing.)

Fifty minutes had elapsed. The *curandero's* son cut the session short, saying that the village noises, especially the dogs, were too loud for worthwhile experiences. As Díaz and Valdés left the bedroom they staggered and stumbled. Although they said their minds felt clear, the tape recording showed their speech to be slurred and their sentence patterns to be awkward and broken. Díaz commented, "it is as the body is intoxicated (*borracho*) and the mind isn't." Don Alejandro spent the next hour discussing their visions in detail with them, saying that with more experience what they saw would become clearer and more meaningful. He told the visitors that Paul should drive when they left, as the effects of *la María* would last the entire night.

As the car traveled through the late Oaxacan darkness, Valdés saw more icon-like images. Among them was the Virgin of Guadalupe amidst red, white and green streaming banners. Whenever the image began to fade, he found that he could recall it at will. Arriving at their destination the three researchers ate a light meal. Díaz wrapped himself in a *sarape(poncho)*, for he had a chill. He remarked that this had happened to him on previous occasions when he had taken the *Salvia* infusion. His heart rate, when measured by Paul, had slowed from its normal 60 beats per minute to about 50. Earlier at the shaman's house, Paul had shone his flashlight into the subject's eyes and both had a normal pupillary response. Valdés felt "heavy" and "sore", especially in the shoulders and upper arms. After a shower, all went to bed.

When the lights went out (about 23:30 h or 2.5 h after ingestion of *la María*), Valdés began to have more visions. He saw a purplish light that changed into a bee or mothlike shape which became a pulsating sea-anemone. The imagery expanded into desert landscape full of moving prickly pear (*Opuntia* spp.) shapes. During the first session the previous summer and throughout the evening Valdés felt the visions appear to be like looking at a cross between a moving cartoon and a silent motion picture. Suddenly, however, he found himself standing in a bizarre, colored landscape talking to a man who was either shaking or holding on to his hand. Next to them was something that resembled the skeleton of a giant stick-model airplane made from rainbow-colored inner tubing. The "reality" of what he was seeing amazed him. After a brief instant, the desert scene reappeared and Valdés then slowly drifted off to sleep. The three researchers rose early the next morning and all were in good spirits.

Discussion and conclusions: ethnopharmacology of *S. divinorum*

Remedial uses

It is beyond the scope of this paper to comment on the efficacy of *S. divinorum* in treatment of the various "folk ailments". There is not enough information available to make a scientific decision. More fieldwork at this time would be more practical and certainly more useful than trying to screen for ant-inflammatory, cathartic, analgesic, diuretic, tonic and magical properties in the laboratory. However, it should be noted that many *Salvia* species are used medicinally throughout the world, and the genus name itself comes from the Latin *salvare*, to save. The Middle English name for sage was *save* or *saue*, from the Latin *Salvia* via Old English *Saluie* (Oxford English Dictionary, 1971), and Chaucer mentions it as a cure for wounds and broken limbs in "The Knightes Tale" (Chaucer, 1927). Common sage, *S. officinalis*, and Clary sage, *S. sclarea*, have had a long history of use in treatment of numerous maladies (Grieve, 1971). *S. miltiorrhiza*, or *tan-shen*, is one of the five astral remedies in Chinese medicine, as is *jen-shen* or ginseng (*Panax* spp.). This sage is credited with many tonic properties in the *Pen T'sao*, published in 1578 (Smith and Stuart, 1973), and is listed in "A Barefoot Doctor's Manual" (Anon., 1974). Siri Altschul has collected information on a number of medicinal *Salvia* from specimens at the Harvard Herbaria (Altschul, 1973) and Díaz lists nine species as being used medicinally in Mexico (Díaz, 1976).

Use in Divination

During the two sessions with *S. divinorum*, the investigators noted the following:

1. Various sensations were reported by the subjects while lying or sitting down in quiet darkness. These included flying or floating and traveling through "space," twisting and spinning, heaviness and lightness of the body and "soreness."
2. Physical effects also accompanied the experience. There was an intoxication that produced dizziness and a lack of coordination on trying to move about. The recording of the second session revealed slurred speech and awkward sentence patterns. Díaz had a decrease in heart rate accompanied by a chill. Both subjects had a normal pupillary response to a light shined into their eyes.
3. Even though the subjects were aware of the sensations and the physical incoordination produced by the *Salvia* infusion, they claimed their minds seemed to be in a state of acute awareness. The experience was not like intoxication from alcoholic beverages.
4. Previous reports of *S. divinorum* ingestion emphasized the mildness of the effects, and the shortness of their duration. It has been shown, however, that under the appropriate conditions of quiet and darkness it was possible to experience effects which lasted for hours. The visions produced were readily terminated by light or noise.
5. There is apparently an aspect of the *Salvia* intoxication that leaves the subject's mind in a receptive state. This was well documented in the second session when both subjects spoke out fairly continuously. Díaz began by describing plants and flowers. After he finished speaking Valdés began with a similar vision. When Díaz lamented his inability to see the religious figures as described by the *curandero*, he apparently triggered off Valdés, who saw such imagery for the rest of the session and during the ride in the car. As Valdés described a castle, Díaz began to see one also.

Don Alejandro's son translated the shaman's explanation of how *S. divinorum* worked in humans,

What happens to the *i-nyi-ma-no* (the soul, the heart, or life, all three concepts are contained in a single Mazatec word) when one drinks the *María* is that the *María* has so much liquor (*licor*) that one is left as in a faint. For this reason a person becomes intoxicated (*borracho*) when they have been entered by the *María*, the oration my father prays and the words of Christ, also. But it really isn't liquor, I tell you, you go into a "delicate" state (*delicado vayas*). Do not worry, do not be afraid of what is happening to the *i-nyi-ma-no*; something does happen, but it is small and unimportant. At times one who takes the *María* becomes half-drunk, but with the result that what they are taking will be engraved on their mind.

Among Mazatec healers who use the three divinatory plants (the mushrooms, the morning glory seeds and the *Salvia*), *S. divinorum* is the first to be employed in shamanic training. Leary and Alpert have been credited with being the first to discover the importance of what they called set ("a person's expectation of what a drug will do to him") and setting ("the environment, both physical and social, in which a drug is taken") to an individual's experiences under the influences of an hallucinogen (Weil, 1972). In traditional cultures, like that of the Mazatecs, the purpose of plants like *ska María Pastora* is to induce visions, and shamans, such as Don Alejandro, are masters at the manipulation of set and setting to such ends. Although reportedly only weakly psychotropic, the *Salvia* infusion will induce powerful visions under the appropriate conditions. Two ritual orations, which heighten the mystery of what is to follow, are performed on the subject or apprentice, who then takes the *María* with the *curandero* himself. As the shaman reveals his visions in the silent darkness, the subject (whose mind has been into a receptive state by the *María* and the ceremonial settings) is able to "see" it also. By having a sober person monitor the session any difficulties that arise will be observed, and if the experience becomes too terrifying, it can readily be terminated by a few words or producing a light. Mastering *S. divinorum* and learning to use the morning glory seeds before employing the mushrooms probably makes an apprenticeship much less traumatic than it would be by use of the fungi alone, in addition to giving the future shaman wider insights into the varieties of hallucinogenic experiences.

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ORIGINAL ARTICLE: College of Pharmacy, The University of Michigan, Ann Arbor, MI 48109 (U.S.A.) and *Departamento de Neurobiología, Instituto de Investigaciones Biomédicas, Universidad Nacional Autónoma de México, Apartado Postal 70228, Ciudad Universitaria 20, D.F. (México).

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