

# Entheogens

Contacting the Sacred

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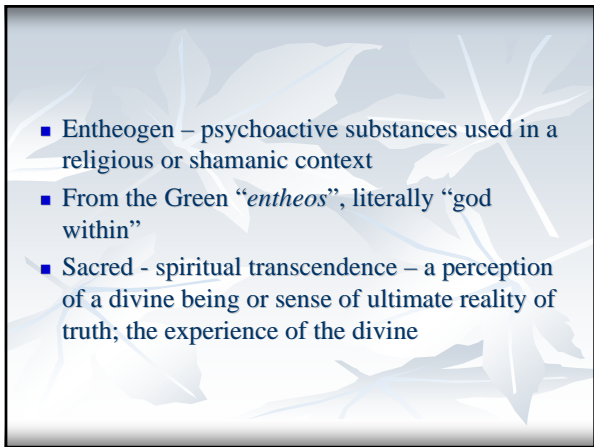
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- Entheogen – psychoactive substances used in a religious or shamanic context
  - From the Greek “*entheos*”, literally “god within”
  - Sacred - spiritual transcendence – a perception of a divine being or sense of ultimate reality of truth; the experience of the divine

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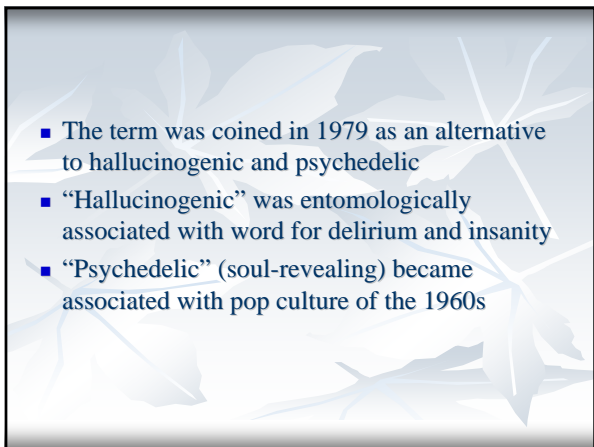
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- The term was coined in 1979 as an alternative to hallucinogenic and psychedelic
  - “Hallucinogenic” was etymologically associated with word for delirium and insanity
  - “Psychedelic” (soul-revealing) became associated with pop culture of the 1960s

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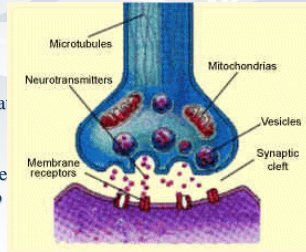
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## Entheogens in the Brain

- Manyentheogens are agonists to the neurotransmitters in the brain
- An agonist is compound that binds to a receptor and mimics (with altered consequences) the response of the molecule designed to fit that receptor



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## Tobacco - *Nicotiana rustica*



- The primary sacred plant of Native North America
- *N. rustica* has 8 times the nicotine of *N. tabacum* (W. Indies)
- Mooney: "in seeking omens for the hunter, in driving away witches or evil spirits, and in regular medical practice."

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## South America

- South American shamans consume very large quantities of tobacco to achieve a visionary state
- Tobacco is chewed and swallowed (cupfuls in a single ritual); the juice and a syrup are drunk; it is used as snuff (60 to 240 insufflations), smoked (five to six three foot cigars) and put in enemas; it is placed in eyes and absorbed through the skin

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- For the unaccustomed this can lead to unconsciousness, permanent mental and physical impairment, and death
- For the shaman, it is a sacrament that allows conversation with the denizens of the supernatural world and the ability to see “hidden things”

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### **Peyote – *Lophophora williamsii***



- Grows in several locations in Northern Mexico and the desert Southwest
- Peyote was considered a “divine plant” in Mexico (Toltec) dating back at least 2,000 years before contact with the Spanish
- The Spanish encountered peyote use in native religious rituals and tried to suppress the activity as Satanic

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- The American Indian Religious Freedom Act Amendments of 1994 made peyote a legal sacrament for the Native American Church (300,000 members)
- Members use peyote for all-night prayer ceremonies for the betterment of all Native peoples
- No detrimental psychological or cognitive effects were observed among long-time, regular users of peyote *in the religious setting*

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## Fun Facts

- Carlos Castaneda brought peyote, and the spirit of peyote, Mescalito, into the popular culture with his book, *The Teachings of Don Juan: A Yaqui Way of Knowledge* (and others in the sequence)
- James Mooney was finally banned from his research on Indian reservations because he supported the Kiowa use of peyote in their religious ceremonies

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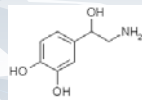
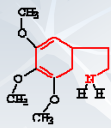
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## Mescaline and Noradrenalin



- The structure of the mescaline molecule (left), the primary psychoactive component of peyote, is very similar to that of the noradrenalin molecule, a brain neurotransmitter
- Mescaline is an agonist for noradrenalin; binding to the same receptors, but having a slightly different effect

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## San Pedro Cactus *Trichocereus pachanoi*



- This night blooming cactus is found in the central Andes between 6,000 and 9,000 feet in Ecuador and Peru
- It is rich in mescaline

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- One of the oldest known South American magic plants with evidence dating back to 1,300 BC
- Called San Pedro in association with St. Peter (prevalence of Catholicism, syncretism), who holds the key to heaven
- Used in healing rituals to cure illness (including alcoholism), insanity, for divination, undo love witchcraft, and counter sorcery
- (See video)

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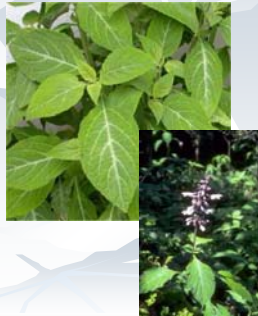
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### Diviner's Sage – *Salvia divinorum*

- Grown in the rainforest of Oaxaca, Mexico and used for divination and healing
- The affects of *S. divinorum* are short lived (45 minute) giving the feeling of “bending” space, and having an out-of-body experience




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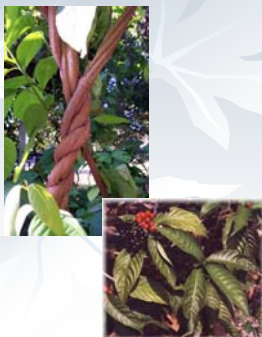
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### Ayahuasca – “Vine of the Soul”



- Ayahuasca is a combination of several plants found growing in the Northwestern Amazon, but the two primary ones are the tall growing vine *Banisteriopsis caapi* and the shrub *Psychotria viridis*

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- *B. caapi* contains the alkaloid harmine, which is an MOA inhibitor
- *P. viridis* contains the chemical agent dimethyltryptamine (DMT), an agent that induces visions
- The combination of the two allows DMT to cross the blood/brain barrier before MOA breaks it down

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- Initial effects usually include nausea, dizziness, and vomiting, which leads to a euphoric or aggressive state
- Ayahuasca can be used for visions and to transform into animals (snakes or jaguars), diagnose illness, see the gods and understand one's place in the social order, and as a vehicle for cosmic travels

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- Recent popularity of ayahuasca has led to a whole new type of ecotourism in the Amazon region (trip within a trip)
- Most Ayahuasqueros will claim to be the only person in all Amazon that knows how to properly brew ayahuasca

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## Iboga - *Tabernanthe iboga*



- *T. iboga* is found in the tropical zones of western Africa
- As an entheogen, it is used by the Bwiti cult of Gabon and Zaire as a vehicle to contact the ancestors

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- During the iboga experience, the consciousness (soul) leaves the body to wander with the ancestors in the land of the dead and communicate with deceased ancestors



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- Ibogaine is currently being touted as a remedy for drug addiction (heroin and cocaine) as well as for alcohol addiction
- The experience reveals deep insights into the causes for addiction and those treated tend to go months without relapse from one treatment; several treatments can lead to lasting stabilization

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## Mandrake – *Mandragora officinarum*



- Mandrake is a member of the family Solanaceae, whose members include tomatoes and tobacco
- Many members of this family, including mandrake, were considered plants of witchcraft in Europe

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## The Mystique of Mandrake

- Part of mandrake's mystique is its anthropomorphic root, which occasionally resembles a human body
- One myth about mandrake is that it was dangerous to harvest the root; a dog was tied to the root and pulled it out, it then died



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## Other Beliefs About Mandrake

- The plant would hide if a person approached it
- Plants growing near the Dead Sea would glow red in the dark
- If pulled up by the roots, the plant would scream and the person hearing the scream would die

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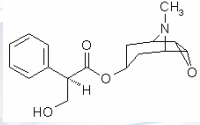
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## Scopolamine



- The alkaloid scopolamine appears to be the primary producer of hallucinogenic effects
- This family of alkaloids is extremely toxic
- The user falls into a deep sleep, loses all sense of reality, and usually remembers little about the experience

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- Mandrake was one of the plants employed by European witches
- The experience of flight is considered to be due to the effects of hallucinogenic substances
- Plants were prepared in a fatty substance (baby fat?) and absorbed through mucus membranes (riding the broomstick)

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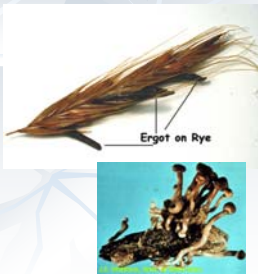
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## Ergot - *Claviceps purpurea*



- Ergot is a fungal infection of certain grasses, especially rye
- Infection appears as a hard brown or purplish-black growth that is somewhat larger than the grain

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## St. Anthony's Fire

- In the Middle Ages in Europe, an infestation of the ergot fungus caused an epidemic of ergot poisoning
- There were two forms of the epidemic; some had seizures and convulsions, others gangrene and loss of extremities, accompanied by hallucinations and delirium
- Ergot also causes spontaneous abortions
- It wasn't until 1676 that the cause of ergotism was determined and grain monitored

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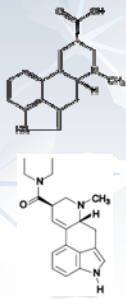
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- The hallucinogenic agent in ergot is lysergic acid, the base molecule for LSD (lysergic acid diethylamide), the most famous synthetic hallucinogen

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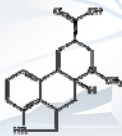
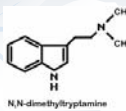
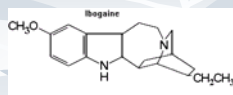
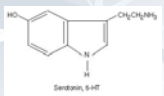
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## Serotonin and Active Molecules Ibogaine, DMT, Lysergic Acid



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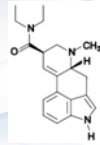
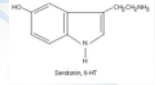
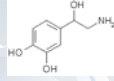
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## Comparison: dopamine, noradrenalin, serotonin, LSD



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