Psychoactive Substances

GE1328 BMS CityU 2015

Part 4:

Mushrooms and more

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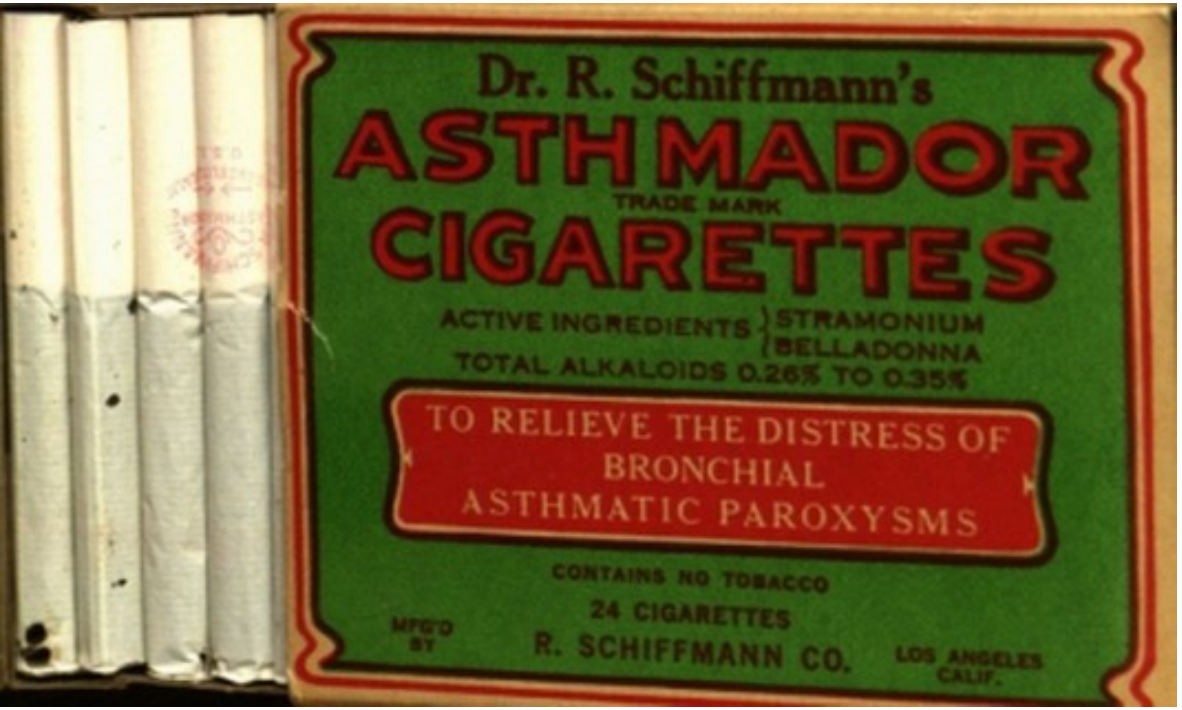
Psychoactive substances from the Solanaceae

- In Europe and the Near East, many plants of the Solanaceae were used in a similar manner. Among these were *Atropa belladonna*, *Hyoscyamus* spp., *Datura* spp. (also used by the North American Indians and some Asian peoples), and *Mandragora officinarum.*


Solaneae.
Datura Stramonium L.
W.Müller n. d. Nat.


CIGARETTES
DE
DATURA
STRAMONIUM


Dr. R. Schiffmann's
ASTHMADOR
TRADE MARK
CIGARETTES
ACTIVE INGREDIENTS } STRAMONIUM
BELLADONNA
TOTAL ALKALOIDS 0.26% TO 0.35%
TO RELIEVE THE DISTRESS OF
BRONCHIAL
ASTHMATIC PAROXYSMS
CONTAINS NO TOBACCO
24 CIGARETTES
MFG'D BY
R. SCHIFFMANN CO.
LOS ANGELES CALIF.


POTTER'S
ASTHMA
CIGARETTES

- Some South American Indians used *Brunfelsia grandiflora* and *Brugmannsia* species in a similar manner.

Reina de la noche, *Brugmannsia grandiflora*, Solanaceae

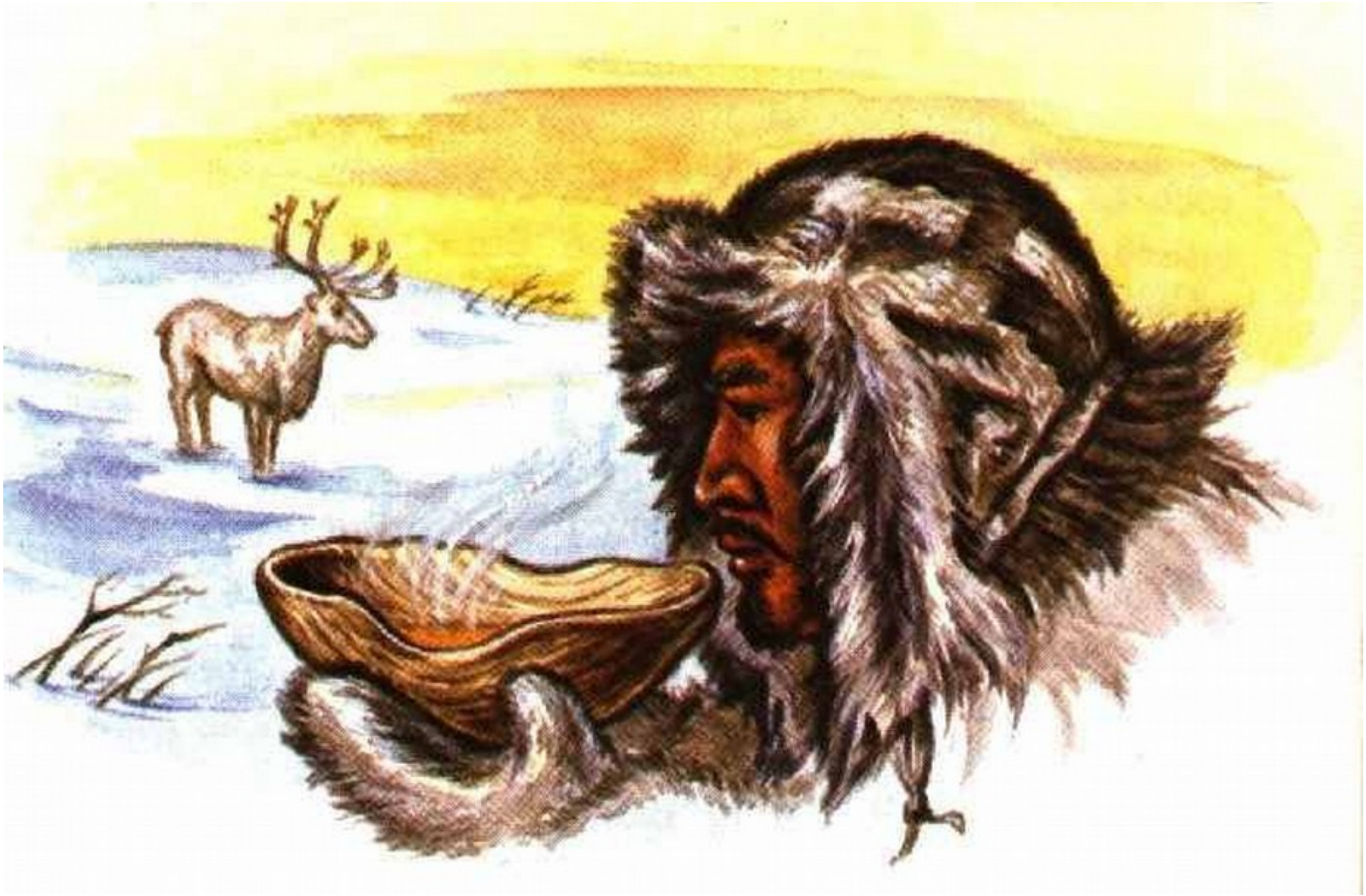
Withania somnifera, Solanaceae

- *Withania somniferum* is a Near Eastern plant that has been used both as a psychoactive substance and as a medicinal plant.

***Withania somniferum*, Solanaceae**

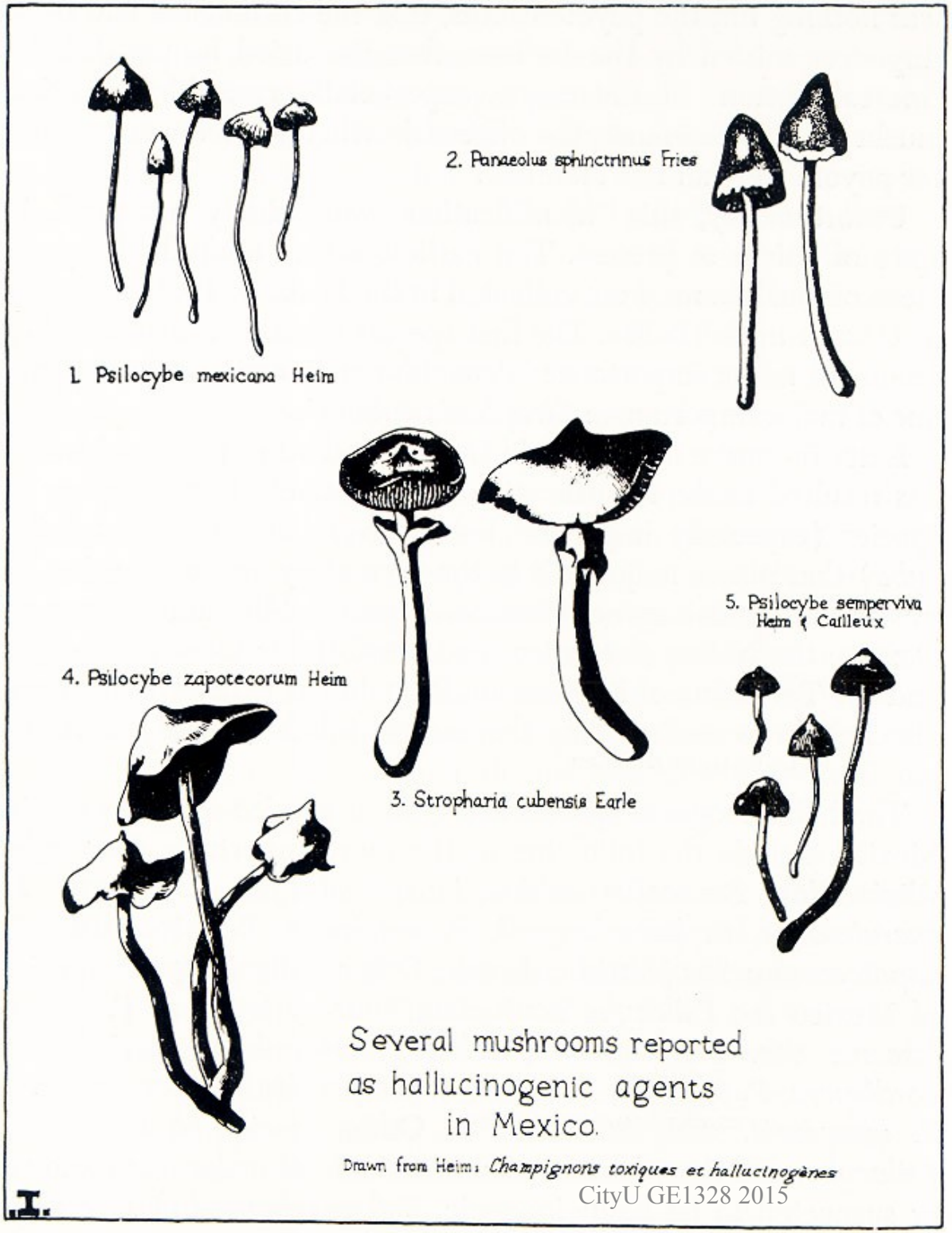
Hallucinogenic fungi

- Among the best known of these are *Amanita muscaria*, the fly agaric. This fungus grows in the temperate zones of Europe and Asia (where it has been widely used) and North America (where it has not been).
- In Siberia, this fungus was used before alcohol became available. The dried mushrooms were sold and were quite expensive. Even the urine from users was recycled.



Psilocybe species

- This fungus is mentioned in Sanskrit writings from India.
- In Mexico, members of the genus Psilocybe and other related mushrooms were widespread and commonly used when the Spanish arrived.
- The Spanish tried to suppress use of these fungi. The practice went underground for a couple of centuries. The fungi are usually used in a curative, religious manner.



R. E. Schultes and A. Hofmann, Botany and Chemistry of Hallucinogens, Thomas, Springfield, Illinois, 1973

- These hallucinogenic fungi have been used for more than 2000 years in Mexico. About 80 years ago they were rediscovered by western scientists.
- Psilocybin is the active compound in many of these fungi.

Ergot, *Claviceps* spp., Clavicepitaceae

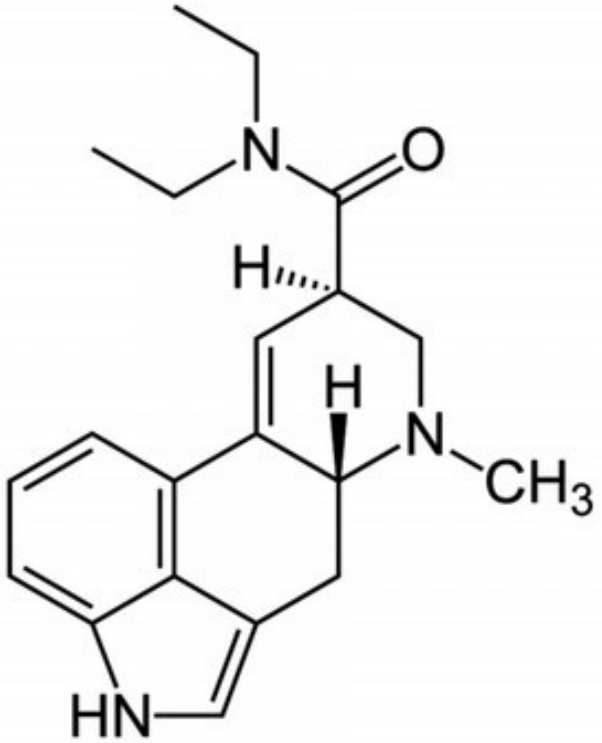
- Another important group of fungal hallucinogens are the ergot alkaloids that come from *Claviceps* species on grasses. These compounds are extremely toxic and produce many physiological changes.
- During the Middle Ages they were responsible for much human poisoning. Some of them are also hallucinogenic and are partially responsible for the bizarre actions of the victims of "St. Anthony's fire".

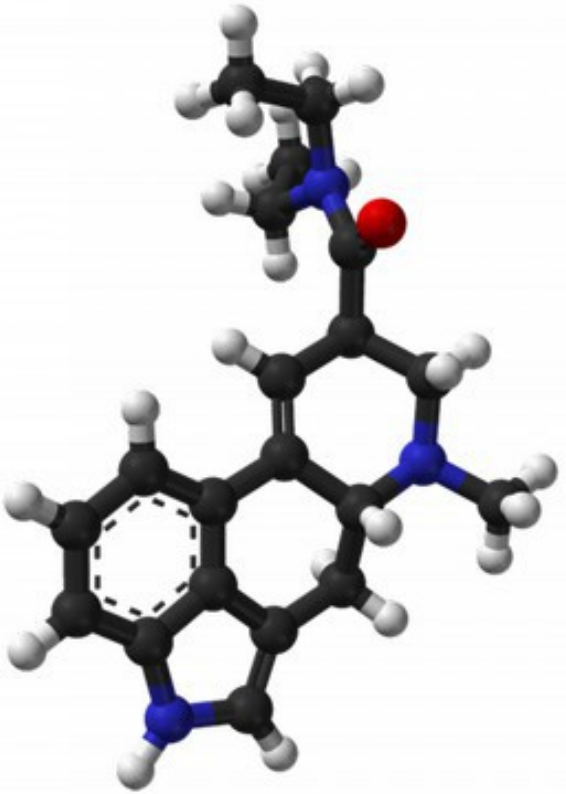
PLATE XXXVII.—*Claviceps purpurea* (Rye ergot). (From Jackson: *Experimental Pharmacology and Materia Medica.*)

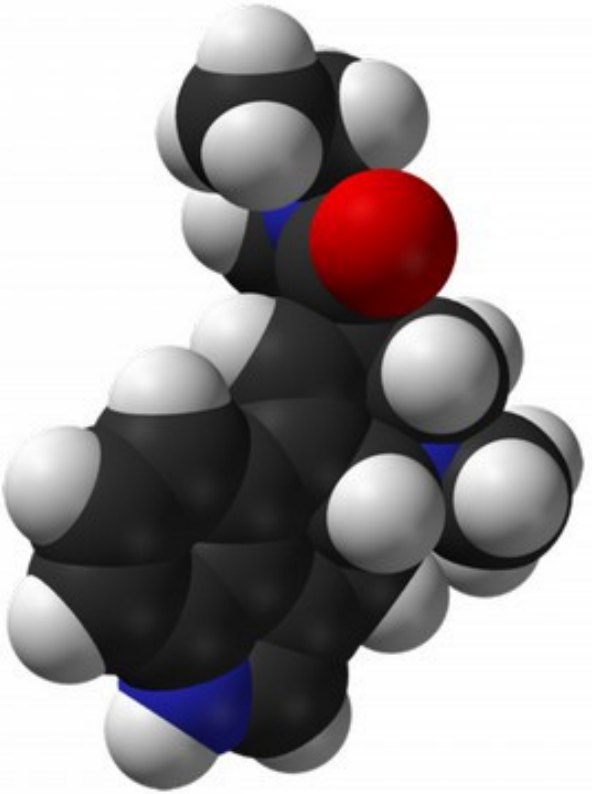
History of LSD

- Chemical name: lysergic acid diethylamide
- Man-made; found in a fungus-ergot
- Street names: Back breaker, battery acid, dots, Elvis, Loonytoons, Lucy in the sky with diamonds, pane, superman, Window pane, Zen
- Most commonly known as acid

LSD-25





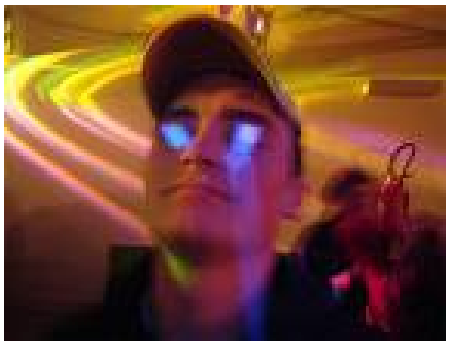


What it does in the body

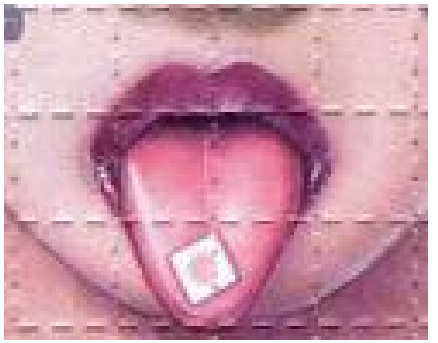
- Causes hallucinations
- Effects are unpredictable and depend on many factors
- The effects of LSD depend on the mental state of the user and what the user expects to feel
- Users refer to their experiences as a “trip” due to the up and down feelings while being on acid.

Physical Effects

- Users feel lightheaded
- Lowered body temperature
- Dilated pupils
- Nausea & vomiting
- Increased heart rate
- Anxious feelings
- Paranoia



- LSD is generally taken by mouth on blotter papers or sugar cubes



History of Acid

- Was first discovered by Albert Hofman in 1938 while looking for a circulatory and respiratory stimulant
- Hofman got high accidentally; 5 years later did it intentionally-Bicycle Day
- 1948-introduced into US as a psychiatric cure-all/ schizophrenia
- 1963-first time drug appeared on streets

- 1967: banned in the US
- Timothy Leary advocated using the drug
- Leary was kicked out of Harvard for promoting the use of LSD

"There are three side effects of acid: enhanced long-term memory, decreased short-term memory, and I forget the third"
Timothy Leary

- The drug is a Schedule I
  - Deemed to have a high potential for abuse
  - It has no legitimate medical use in treatment
  - There is a lack of accepted safety for its use under medical supervision

LSD is Not an addictive drug

It is currently being reconsidered for exploring, and possibly treating schizophrenic hallucinating patients

Side Effects

- Users want to feel a change in mood
- A distorted sense of space and time
- Flashbacks
- Prolonged anxiety and depression after the drug is stopped
- Growing tolerance to the drug

Ololiuqui

- In Mexico, the seeds of a number of *Ipomoea* and *Rivea* species (Convolvulaceae) were used in religious-medical applications as well. They contain the same compounds more or less. One important Mexican plant of this type was called "ololiuqui".

R. E. Schultes and A. Hofmann, Botany and Chemistry of Hallucinogens, Thomas, Springfield, Illinois, 1973

Shaman Preparing Olioliuqui

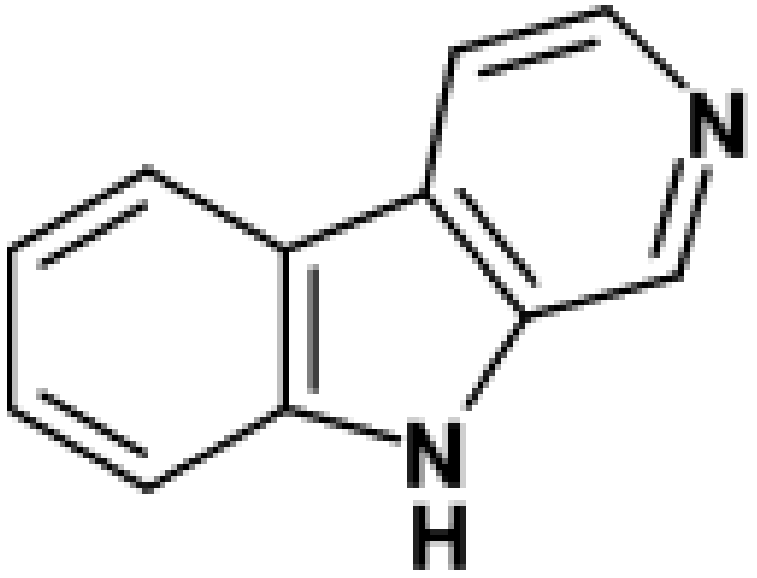
Vision after Olioliuqui

Peganum harmala, Zygophyllaceae

Peganum harmala is a Near Eastern plant that has been used as a psychoactive material in the past. It has been introduced as a weed and is found in much of the arid subtropical world today. The active compounds are β-carboline or harmane alkaloids.

***Peganum harmala*, Zygophyllaceae**

Chemical Structure of beta-Carboline



Beta Carboline

END OF PART FOUR