

Drugs 101

Hallucinogens

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What are Hallucinogens?

❖ Substances that make you hallucinate?

- *Not necessarily*

What are Hallucinogens?

- ❖ Substances that make you hallucinate?
 - Not necessarily
 - Definitions
 - Hallucinogens
 - Dissociative Drugs
 - (for the most part, anesthetics)

What are Hallucinogens?

Hallucinogens

Amanita mushrooms (muscimol)

Psilocybe mushrooms (psilocybin)

Peyote & other cacti (contain mescaline)

Datura (Jimson weed) & Angel trumpet
(Brugmansia)

LSD (lysergic acid diethylamide)

Salvia divinorum

Morning Glory (d-lysergic acid amide)

Nutmeg

Amanita muscaria the “magic mushroom” or “fly agaric”



(*Amanita muscaria*. Tim Bekaert, 2005)



Alice talks to the caterpillar sitting on the mushroom. He tells her that eating one side will make her taller, and the other side make her shorter

- ❖ Found throughout the U.S.
- ❖ Muscimol is the primary psychoactive alkaloid
- ❖ Dissociative

Psilocybe Mushrooms

- ❖ *Psilocybe cubensis* typically contains 1.6 mg psilocybin per gram of dried mushroom
- ❖ 40 mcg/kg intoxicates
- ❖ 3 to 4 hour duration
- ❖ Small brown mushrooms that stain blue to the touch
- ❖ Usually cultivated, but also gathered in warm climates



Mescaline

- ❖ Hallucinogenic alkaloid (phenethylamine)
- ❖ Synthesized in 1919
- ❖ Found naturally in peyote and other cacti

Peyote (contains mescaline)



Peyote button displayed by unidentified Native American man, 1993. (AP Photo. *Albuquerque Jnl*, Richard Pipes)

- ❖ *Lophophoria williamsii* contains 1.5% mescaline (β -3,4,5-trimethoxyphenethylamine)
- ❖ 3mg/kg potent intoxication
- ❖ Up to 8 to 10 hour duration
- ❖ Continued religious use by indigenous people



Trichocereus species



- ❖ Most popular source of non-sacramental mescaline in the U.S. isn't peyote...
- ❖ Can be found in any plant store

Datura stramonium

- ❖ Leaves typically cut and smoked
- ❖ Contains atropine, scopolamine, and...
- ❖ Ancient ceremonial use in the U.S.
- ❖ Occasional report of death by ingestion of root
- ❖ Many other sources for atropine and scopolamine
- ❖ Member of Nightshade family
- ❖ “Jimson weed”



Angel's Trumpet, *Brugmansia*

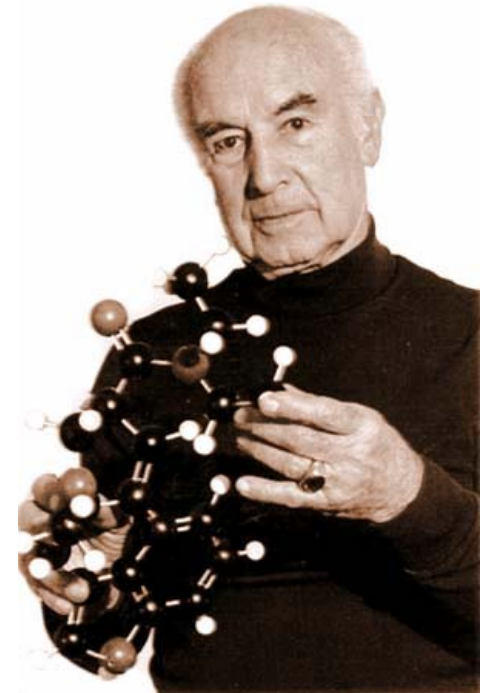


LSD (Lysergic acid diethylamide)

- ❖ Synthesized in Switzerland in 1938 by Albert Hofmann at Sandoz
- ❖ Originally found in ergot fungus
- ❖ Acts on serotonin receptors
- ❖ “Acid”
- ❖ “Blotter acid”
- ❖ “Window pane”



“Condom” acid, pills
and powder, DEA



<http://www.nytimes.com/2006/01/07/international/europe/07hoffman.html> 8jan2006

Salvia divinorum

- ❖ Many other Salvia species may also contain psychoactive chemicals. “Salvinorin A”
- ❖ Related to sage plants and the mint family
- ❖ Does not grow in the United States naturally, but can readily be cultivated. Of Mexican origin
- ❖ First reported in 1962 but popularity increased via Internet. Not a controlled substance but US military and certain jurisdictions are concerned about it



d-Lysergic Acid Amide



Ipomoea species
Morning Glory
5-10 grams of seeds



Argyria nervosa
Hawaiian Baby Woodrose
4-8 seeds ingested

Nutmeg



Myristica fragrans Houtt.

- ❖ Mild hallucinogen at 1-4 teaspoons, higher doses, over 5 tsp. or 25 grams can cause “nutmeg poisoning”
- ❖ Facebook and MySpace groups devoted to getting high on nutmeg

Dissociative Drugs

Dissociative Drugs

PCP (phencyclidine)

Ketamine

Dextromethorphan

PCP (phencyclidine)

- ❖ Originally developed as a general anesthetic in the 1950s by Parke Davis
- ❖ Distorts perceptions and produces feelings of detachment
- ❖ Alters distribution of neurotransmitter glutamate
- ❖ “Angel Dust”



Ketamine (“Special K”)

- ❖ Anesthetic developed to replace PCP, manufactured by Pfizer
- ❖ Used in human and veterinary medicine
- ❖ Injected or dried and snorted
- ❖ Feelings of floating, or sometimes terrifying “bad trip” called “K hole”
- ❖ “Vitamin K”
- ❖ “K”
- ❖ “Bump”



DXM (dextromethorphan)

Cough suppressant

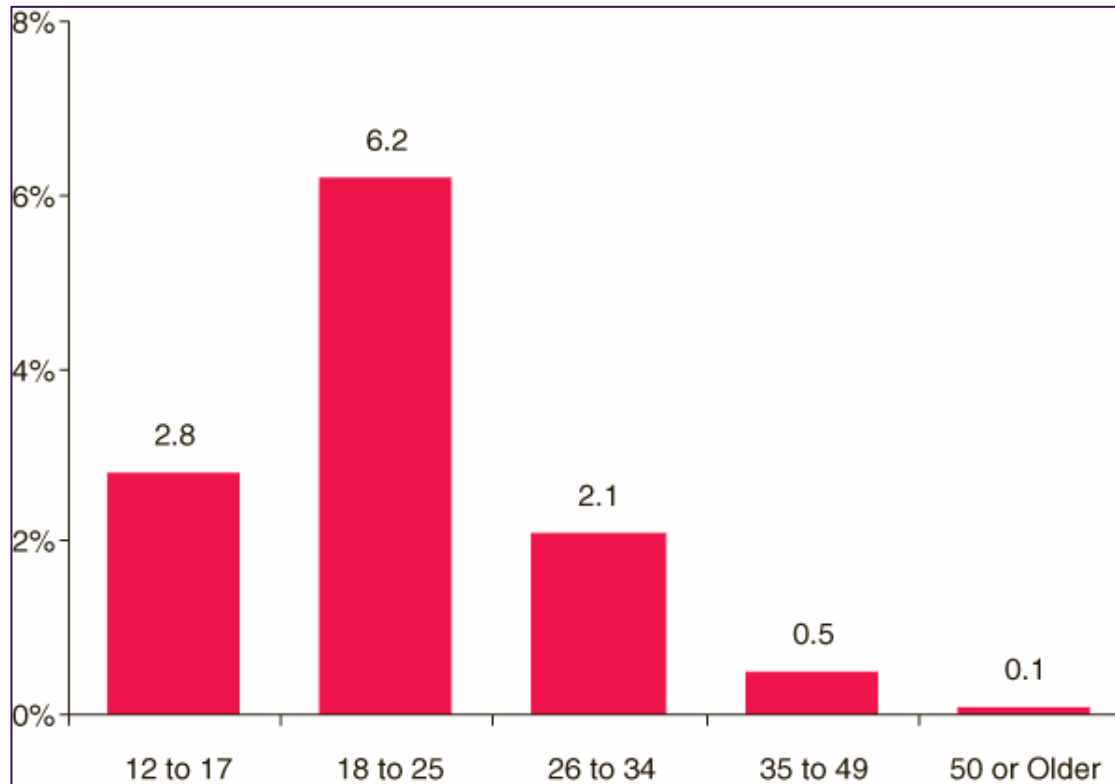
- ❖ (Also used to boost effects of analgesics for severe pain)
- ❖ Typical dose 15-30 mg. for cough
- ❖ 4 or more ounces may cause distorted visual perceptions, similar effects to PCP and Ketamine
- ❖ “Robo”
- ❖ Internet groups to discuss “Robo-ing”



Statistics on Use

- ❖ **National Survey on Drug Use and Health (2004 & 2005)**
- ❖ **Monitoring the Future (National Survey) (2005)**
- ❖ **Indiana ATOD Survey (2006)**
- ❖ **Drug Abuse Warning Network (DAWN)**

NSDUH Hallucinogen Statistics



Percentages of Past Year Hallucinogen Use among Persons Aged 12 or Older, by Age Group: 2004 and 2005

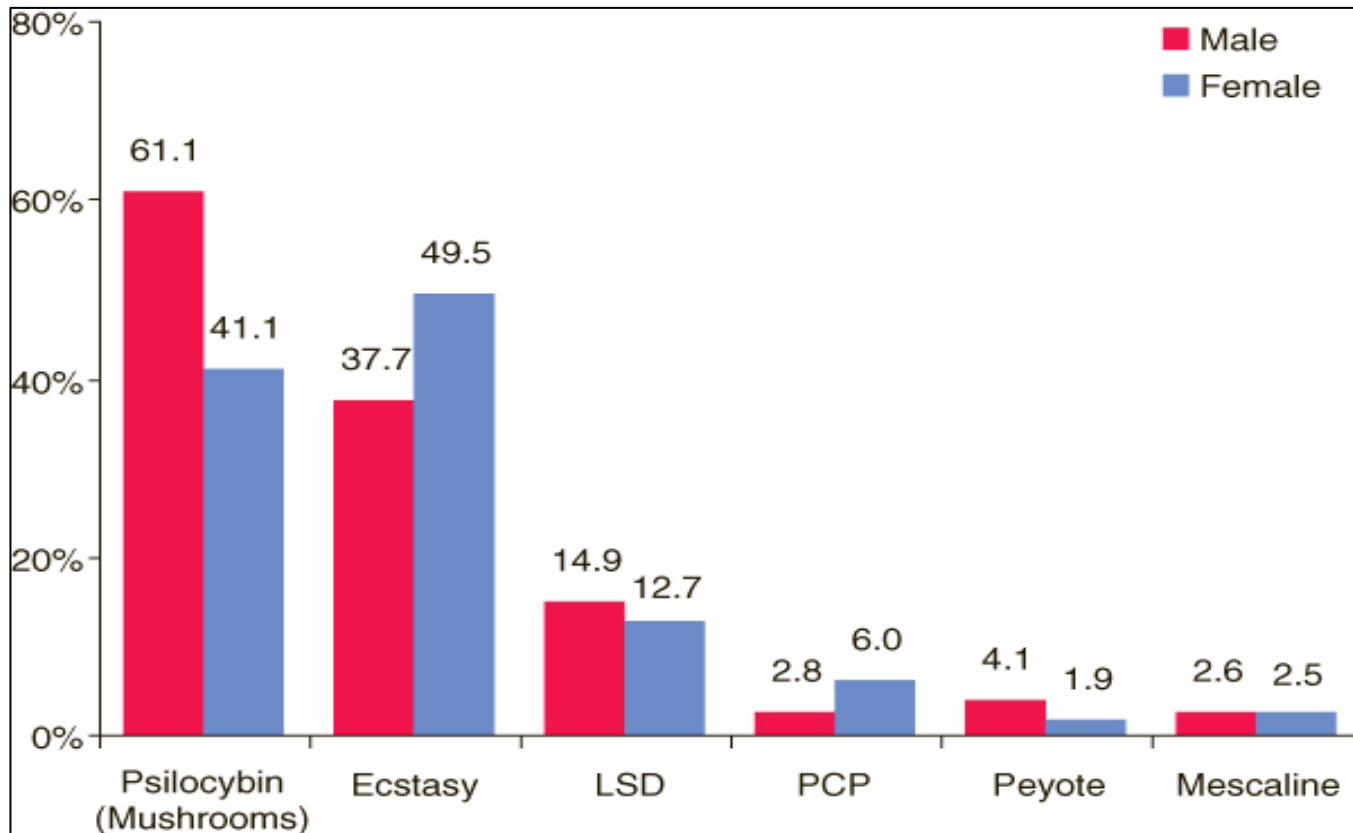
NSDUH Hallucinogen Statistics

Age Group	Percent
12 to 17	2.8%
18 to 25	6.2%
26 to 34	2.1%
35 to 49	0.5%
50 or Older	0.1%

Percentages of Past Year Hallucinogen Use among Persons Aged 12 or Older, by Age Group: 2004 and 2005

NSDUH Hallucinogen Statistics

Percentages of Past Year Use of Specific Types of Hallucinogens among Recent Hallucinogen Initiates* Aged 12 or Older, by Gender: 2004 and 2005



Monitoring the Future Hallucinogens 2005

	8th	10th	12th
Psychedelics	2.4	4.0	5.5
LSD	1.2	1.5	1.8
Others	2.0	3.5	5.0

Indiana ATOD Annual Use Hallucinogens 2006

	6th	7th	8th	9th	10th	11th	12th
Psychedelics	0.4	1.1	2.1	3.1	3.7	4.2	4.5
LSD	0.3	0.8	1.7	2.4	2.9	3.1	3.1
Others	0.2	0.6	1.1	1.6	2.0	2.6	3.2

DAWN ER Visits for DXM, 2004

- ❖ In 2004, an estimated 12,584 ER visits (0.7% of all drug related emergency department visits) involved pharmaceuticals containing dextromethorphan.
- ❖ The rate of ER visits resulting from nonmedical use of dextromethorphan for those aged 12 to 20 was 7.1 visits per 100,000 population compared with 2.6 visits or fewer per 100,000 for other age groups.
- ❖ ER patients aged 12 to 20 accounted for almost half (48%) of all the ER visits resulting from nonmedical use of dextromethorphan.
- ❖ The rates of DAWN ER visits resulting from any use of dextromethorphan among those aged 12 to 20 was 10.3 per 100,000 population compared with 4.3 visits per 100,000 for the population overall.
- ❖ Alcohol was implicated in about a third (36%) of emergency department visits involving nonmedical use of dextromethorphan

Hallucinogens in ER Visits, 2005

Drug	Drug-Related ER Visits DAWN Hospitals
Cocaine	448, 481
Heroin	164, 572
Ketamine	275
LSD	1,864
PCP	7,535
Misc. hallucinogens	3,792

AAPCC Annual Report 2005

Substance	Number of human exposures reported to US Poison Control Centers
Hallucinogenic mushrooms	849
Muscarine mushrooms	19
Hallucinogenic plants	355
Solanine plants (nightshade family)	1,166
Ketamine	161
Dextromethorphan (APA/ASA)	67,038.00
Hallucinogens (general, various)	1,924
Mescaline/peyote	102
PCP	662

2005 Annual Report of the American Association of Poison Control Centers' National Poisoning and Exposure Database. *Clinical Toxicology*, 44:803-932, 2006

Sources

- ❖ Halpern, John. (2003) *Hallucinogens and Dissociative Agents Naturally Growing in the United States.*
- ❖ IPRC ATOD Survey (2006)
- ❖ AAPCC Annual Report (2005)
- ❖ Monitoring the Future
- ❖ NSDUH. *Patterns of Hallucinogen Use and Initiation: 2004 and 2005 (July 5, 2007).*
- ❖ National Survey on Drug Use and Health (NSDUH)
- ❖ NIDA: Hallucinogens and Dissociative Drugs.
- ❖ Drug Abuse Warning Network (DAWN) reports

Thank You !

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