

HALLUCINOGENS

WHAT YOU NEED TO KNOW



Australian Government
Department of Health

WHAT ARE HALLUCINOGENS?

Hallucinogens cause perceptual distortions such as hallucinations. Hallucinations are experiences where people hear or see things that aren't really there, or where perception is altered, for example colours or shapes may appear to be changing or different to usual. They can also be tactile (touch) or olfactory (smell).¹ In addition, users may experience unusual thoughts, feelings or beliefs.

Hallucinogens are also known as psychedelics and can be naturally occurring or manufactured. The most commonly known synthetic hallucinogen is LSD. Naturally occurring hallucinogens include magic mushrooms, DMT, mescaline and salvia. In recent years, new psychoactive drugs have arrived on the market that are designed to mimic the hallucinogenic effects of these drugs (For more information, see 'New Psychoactive Substances' factsheet at www.comorbidity.edu.au/cre-resources/public).

Other names for LSD include acid, tabs and trips. Magic mushrooms are also known as mushies and shrooms. Salvia is sometimes known as Sally, sage, magic mint and lady's sage. Being under the influence of hallucinogens is also known as 'tripping'.

WHAT IS...?

LSD (ACID)

LSD (lysergic acid diethylamide) is a powerful mood and perception altering drug. Only very small doses are required to produce changes in mood, perception, consciousness and thought.

LSD is usually prepared as a liquid and can be sold in a variety of forms, including tablets, capsules, small gelatine squares ('window panes') and microdots. It is most frequently sold on small pieces of blotting paper known as 'tabs'. Tabs are taken orally, often held under the tongue until the paper dissolves.²

MAGIC MUSHROOMS

Magic mushrooms are a nickname for fungi that have hallucinogenic effects. Usually these are due to the chemical psilocybin or psilocin.³ Mushrooms may be fresh or dried and are eaten raw, boiled in water to make a tea, or cooked with other foods to disguise the flavour.³ Psilocybin is converted by the body into psilocin, which belongs to the same chemical family as LSD so its effects are similar, although full hallucinations are rare.³

MESCALINE

Mescaline is another type of hallucinogen, originally extracted from the peyote cactus.⁴ It is also found in some other types of cactus and can be manufactured.^{5,6}

SALVIA

Salvia divinorum (often known simply as 'salvia') is a plant that is native to Mexico. It is legal in some countries but illegal in Australia. The active ingredient is salvinorin A.^{7,8} Salvia is usually sold as dried leaves or extracted salvinorin A in the form of crystals.⁹

DMT, 5-MEO-DMT AND RELATED TRYPTAMINES

DMT (dimethyltryptamine) is a powerful hallucinogenic drug found in some plants and is chemically very similar to psilocybin. In Australia, most DMT bought on the street is a synthetic equivalent.¹⁰ In its pure form it is a crystal, while on the street it is usually a powder.^{10, 11}

5-MeO-DMT (5-methoxy-dimethyltryptamine) is also a naturally occurring drug present in some plants.¹² It can also be found in the venom of the *Bufo alvarius* toad which is native to North America.¹³

There are a number of other related hallucinogenic chemicals, including AMT, DET, DPT, DBT, DiPT, and 5-MeO-DiPT.¹⁴

LSA, HAWAIIAN BABY WOODROSE

Hawaiian Baby Woodrose is a plant native to India.⁷ Its hallucinogenic effects are due to its seeds, which contain LSA (d-lysergic acid amide), a precursor to LSD or acid. LSA is also found in some other plants, e.g. some varieties of morning glory, and some types of fungus.¹⁵

DOB AND OTHER PHENETHYLAMINES

Some phenethylamines, for example DOB, can also have hallucinogenic effects (please see 'Emerging Psychoactive Drugs' factsheet for more information).

HOW MANY PEOPLE USE HALLUCINOGENS?

According to the 2016 National Drug Strategy Household Survey, one in every one hundred people (1%) in Australia (aged 14 or over) had used hallucinogens in the past 12 months.¹⁶

WHAT ARE THE EFFECTS?

The effects of hallucinogens are extremely variable and unpredictable, even if the person has used the same substance before. Factors that can influence how the drug affects them include the person using (e.g. mood, personality), the setting and the drug itself (including the amount taken, the potency and how it's used e.g. swallowed or smoked).

Broadly speaking, depending on the specific substances, the effects of hallucinogens may include:^{3, 7-9, 17-20}

- Dilated (enlarged) pupils
- Increased heart rate and blood pressure
- Increased body temperature and sweating and/or chills
- Euphoria or a 'high'
- Laughing fits
- Hallucinations (e.g. seeing or hearing things that aren't really there)
- Distress, anxiety, panic attacks, fear or terror (a 'bad trip')
- Poor coordination and problems moving (physical impairment or incapacitation)
- Drowsiness
- Sweating and palpitations
- Muscle aches
- Stomach cramps
- Nausea and vomiting
- Poor concentration
- Restlessness
- Trance-like states
- Vivid perceptual distortions (e.g. things looking/feeling weird or different)
- Feelings of relaxation or stimulation
- Distorted sense of time and place, for example:
 - Derealisation, where the user feels that the world around them is no longer real
 - Depersonalisation, where the user feels that they have been divorced from their 'self' and that their experiences and sensations no longer belong to them
- Loss of consciousness
- Paranoia (feeling extremely suspicious and frightened)
- Psychosis: a loss of contact with reality that may happen while under the influence and can last for several hours after the drug effects have worn off. This may be most likely among people who are vulnerable to psychosis (e.g. people with schizophrenia)

Effects of specific hallucinogens

Drug	How is it usually taken?	How long does it take to have an effect?	How long do the effects last for?
LSD ¹⁹	Swallowed	Approx. 30 minutes	Approx. 8-12 hours
Magic mushrooms ³	Swallowed	Approx. 30 minutes	Approx. 4-6 hours
Mescaline ^{4, 7, 21}	Swallowed, smoked or inhaled	Within 1-2 hours	Approx. 6-12 hours
Salvia ⁷⁻⁹	Smoked or chewed. If smoked, produces a more faster, more intense and short-lived effect	If chewed, within a few minutes If smoked, within a few seconds/ minutes	Up to an hour if chewed Approx. 15-30 minutes if smoked
DMT, 5-MeO-DMT and related tryptamines	DMT and 5-MeO-DMT are usually smoked	Within a few seconds	DMT effects approximately 1 hour 5-MeO-DMT effects 1-2 hours. Other tryptamines vary

These effects are all very variable according to the amount used and concentration.^{19, 22}

WHAT ARE THE RISKS?

One of the major risks is that the effects of illegal drugs are unpredictable. Whether a person is a first-time, occasional or regular user, they are at risk of negative reactions and problems when using hallucinogens. Along with those described in the 'Effects' section, these can also include:^{4, 8, 9, 17, 18, 23}

- **Increased risk of accident or injury while under the influence**
- **Unpleasant after-effects, which may include tiredness, flashbacks, dizziness and amnesia**
- **Poisoning (see paragraph below)**

A particular risk with magic mushrooms and some other plant-based hallucinogens is that of mistaken identity; poisonous mushrooms can easily be misidentified as magic mushrooms. Consuming these poisonous mushrooms can have serious and even fatal consequences.³

People who are having a 'bad trip' — i.e. experiencing anxiety, panic attacks, fear or terror following use can sometimes become aggressive or violent towards themselves (self-harm) or other people.

There has not been a great deal of scientific research into the long-term effects of hallucinogen use, especially among those that have emerged more recently (e.g. salvia⁹ and LSA), though some hallucinogens have been associated with:⁹

- **Flashbacks (see next page)**
- **Possible addiction (see next page)**
- **Depression**
- **Anxiety and panic attacks**
- **Personality changes**
- **Memory problems**
- **Psychosis, particularly in people who are already prone to these problems**

This doesn't necessarily suggest that hallucinogens cause these problems. For people who are prone to these types of issues, the use of hallucinogens may bring on the symptoms, or make them worse. People who use hallucinogens often use other drugs too, which makes it difficult to know which problems are caused (or triggered) by which drugs. More research is needed before anyone knows for certain.

WHAT ARE FLASHBACKS?

The most commonly discussed long-term effect of using hallucinogens is the experience of 'flashbacks'. A flashback is a spontaneous recurrence of a specific experience that occurred while taking the drug. These flashbacks can be distressing.

Flashbacks may be one or more of the following:

- **Perceptual** – for example, experiencing greater colour intensity, face distortions, the sensation of insects crawling, etc.
- **Somatic** – altered bodily sensations such as pain
- **Emotional** – re-visiting lonely or depressed states of being

These flashbacks are usually brief, but can reoccur for days, weeks and sometimes even years after taking the drug.¹⁰ They could be triggered by the use of other substances (e.g. cannabis or stimulants such as methamphetamine),²⁴ and may be mistaken as symptoms of psychosis.

ARE HALLUCINOGENS ADDICTIVE?

Hallucinogens do not seem to be as addictive as some other drugs. However, some people do report that they have problems with their use and that they find it hard to stop taking the drug. It seems that hallucinogens may be addictive for a small number of people who use them regularly.^{23, 25, 26}

SOURCES

1. Rosenthal, S.B., 1964. Persistent Hallucinoses Following Repeated Administration of Hallucinogenic Drugs. *American Journal of Psychiatry*. 121: p. 238-244.
2. Australian Crime Commission, 2012. Illicit Drug Data Report 2010-11, Australian Crime Commission: Canberra.
3. European Monitoring Centre for Drugs and Drug Addiction, 2011. Drug profile: Hallucinogenic mushrooms. <http://www.emcdda.europa.eu/publications/drug-profiles/mushrooms> accessed 27 October 2012.
4. Cunningham, N., 2008. Hallucinogenic plants of abuse. *Emergency Medicine Australasia*. 20(2): p. 167-74.
5. Kostoudi, S. and Mironidou-Tzouveleki, M., 2006. Hallucinogenic cacti: complicated chemical factories. *Review of Clinical Pharmacology and Pharmacokinetics, International Edition*. 20(2): p. 214-215.
6. National Institute on Drug Abuse, 2009. Hallucinogens: LSD, Peyote, Psilocybin and PCP, National Institute on Drug Abuse, National Institutes of Health: Bethesda, MD.
7. Richardson, W.H., 3rd, Slone, C.M. and Michels, J.E., 2007. Herbal drugs of abuse: an emerging problem. *Emergency Medicine Clinics of North America*. 25(2): p. 435-57; abstract ix.
8. Rosenbaum, C.D., Carreiro, S.P. and Babu, K.M., 2012. Here today, gone tomorrow...and back again? A review of herbal marijuana alternatives (K2, Spice), synthetic cathinones (bath salts), kratom, *Salvia divinorum*, methoxetamine, and piperazines. *Journal of Medical Toxicology*. 8(1): p. 15-32.
9. European Monitoring Centre for Drugs and Drug Addiction, 2011. Drug profile: *Salvia divinorum*. website <http://stda.europa.eu/publications/drug-profiles/salvia> accessed 27 October 2012. 2011.
10. National Drug and Alcohol Research Centre, 2011. Hallucinogens, National Drug and Alcohol Research Centre, University of New South Wales: Sydney.
11. Bruno, R., Matthews, A.J., Dunn, M., Alati, R., McIlwraith, F., Hickey, S., Burns, L. and Sindicich, N., 2012. Emerging psychoactive substance use among regular ecstasy users in Australia. *Drug and Alcohol Dependence*. 124(1-2): p. 19-25.
12. Shen, H.W., Wu, C., Jiang, X.L. and Yu, A.M., 2010. Effects of monoamine oxidase inhibitor and cytochrome P450 2D6 status on 5-methoxy-N,N-dimethyltryptamine metabolism and pharmacokinetics. *Biochemical Pharmacology*. 80(1): p. 122-8.
13. Weil A.T. and W., D., 1994. *Bufo alvarius*: A potent hallucinogen of animal origin. *Journal of Ethnopharmacology*. 41(1-2): p. 1-8.
14. Wang, M.J., Tsai, C.H., Hsu, W.Y., Liu, J.T. and Lin, C.H., 2009. Optimization of separation and online sample concentration of N,N-dimethyltryptamine and related compounds using MEKC. *Journal of Separation Science*. 32(3): p. 441-5.
15. Petroski, R., Powell, R. and Clay, K., 1992. Alkaloids of *Stipa robusta* (Sleepygrass) Infected With an *Acremonium* Endophyte *Natural Toxins*. 1: p. 84-44.
16. Australian Institute of Health and Welfare, 2017. 2016 National Drug Strategy Household Survey report, AIHW: Canberra.
17. Sumnall, H.R., Measham, F., Brandt, S.D. and Cole, J.C., 2011. *Salvia divinorum* use and phenomenology: results from an online survey. *Journal of Psychopharmacology*. 25(11): p. 1496-507.
18. Kremer, C., Paulke, A., Wunder, C. and Toennes, S.W., 2012. Variable adverse effects in subjects after ingestion of equal doses of *Argyrea nervosa* seeds. *Forensic Science International*. 214(1-3): p. e6-8.
19. European Monitoring Centre for Drugs and Drug Addiction, 2011. Drug profile: LSD. <http://www.emcdda.europa.eu/publications/drug-profiles/lsd> accessed 27 October 2012.
20. Solms, H., 1958. The significance of 'comparative pharmacopsychiatric analysis' for the study of the relationship between chemical structure and psychosis due to psychotoxic substances. *Confinia Neurologica*. 18(2-4): p. 156-158.
21. Nichols, D.E., 2004. Hallucinogens. *Pharmacology and Therapeutics*. 101(2): p. 131-81.
22. Perron, B.E., Ahmedani, B.K., Vaughn, M.G., Glass, J.E., Abdon, A. and Wu, L.T., 2012. Use of *Salvia divinorum* in a nationally representative sample. *American Journal of Drug and Alcohol Abuse*. 38(1): p. 108-13.
23. American Psychiatric Association, 2000. Diagnostic and statistical manual of mental health disorders, fourth edition, text revision, Washington, DC: American Psychiatric Association.
24. Halpern, J., 2003. Hallucinogen persisting perception disorder: what do we know after 50 years? *Drug and Alcohol Dependence*. 69(2): p. 109-119.
25. Stone, A., Storr, C. and Anthony, J., 2006. Evidence for a hallucinogen dependence syndrome developing soon after onset of hallucinogen use during adolescence. *International Journal of Methods in Psychiatric Research*. 15(3): p. 116-130.
26. Stone, A.L., O'Brien, M.S., De La Torre, A. and Anthony, J.C., 2007. Who is becoming hallucinogen dependent soon after hallucinogen use starts? *Drug and Alcohol Dependence*. 87(2-3): p. 153-163.

FOR MORE INFORMATION

We have listed some of the national telephone helplines and websites below.

For free and confidential advice about alcohol and other drugs, call the

National Alcohol and Other Drug Hotline

1800 250 015

It will automatically direct you to the Alcohol and Drug Information Service in your state or territory. These local alcohol and other drug telephone services offer support, information, counselling and referral to services.

Australian Drug Foundation

Provides information about drugs and links to services in each state and territory

www.adf.org.au

DrugInfo Line

Provides information about drugs and alcohol. Open 9am–5pm, Monday to Friday

1300 85 85 84 or **03 8672 5983**. Or visit **www.druginfo.adf.org.au**

Just Ask Us

Provides information about drugs, alcohol, health and well-being

www.justaskus.org.au

Kids Helpline

Free, private and confidential telephone and online counselling service for young people aged 5–25 years Open 24 Hours **1800 55 1800**

Lifeline

24 hour crisis line **131114**

Also available is one-on-one chatlines for crisis support, visit

www.lifeline.org.au/Find-Help/Online-Services/crisis-chat

Counselling Online

Free, confidential counselling service for people using drugs, their families and friends

www.counsellingonline.org.au

National Drugs Campaign

Australian Government website provides information about illicit drugs and campaign resources.

www.australia.gov.au/drugs

Family Drug Support

For families and friends of people who use drugs or alcohol

1300 368 186

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