



## What Are Hallucinogens?

(National Institute on Drug Abuse; National Institutes of Health; U.S. Department of Health and Human Services)

Hallucinogens are a diverse group of drugs that alter perception (awareness of surrounding objects and conditions), thoughts, and feelings. They cause hallucinations, or sensations and images that seem real though they are not. Hallucinogens can be found in some plants and mushrooms (or their extracts) or can be human-made. People have used hallucinogens for centuries, mostly for religious rituals. Common hallucinogens include the following:

- **Ayahuasca** is a tea made from one of several Amazonian plants containing *dimethyltryptamine* (DMT), the primary mind-altering ingredient. Ayahuasca is also known as Hoasca, Aya, and Yagé.
- **DMT** is a powerful chemical found in some Amazonian plants. Manufacturers can also make DMT in a lab. The drug is usually a white crystalline powder. A popular name for DMT is Dimitri.
- ***D-lysergic acid diethylamide* (LSD)** is one of the most powerful mood-changing chemicals. It is a clear or white odorless material made from lysergic acid, which is found in a fungus that grows on rye and other grains. LSD has many other names, including Acid, Blotter, Dots, and Yellow Sunshine.
- **Peyote (mescaline)** is a small, spineless cactus with mescaline as its main ingredient. Peyote can also be synthetic. Buttons, Cactus, and Mesc are common names for peyote.
- ***4-phosphoryloxy-N,N-dimethyltryptamine* (psilocybin)** comes from certain types of mushrooms found in tropical and subtropical regions of South America, Mexico, and the United States. Other names for psilocybin include Little Smoke, Magic Mushrooms, Purple Passion, and Shrooms.

Some hallucinogens also cause users to feel out of control or disconnected from their body and environment. Common examples include the following:

- ***Dextromethorphan* (DXM)** is a cough suppressant and mucus-clearing ingredient in some over-the-counter cold and cough medicines (syrups, tablets, and gel capsules). Robo is another popular name for DXM.
- **Ketamine** is used as a surgery anesthetic for humans and animals. Much of the ketamine sold on the streets comes from veterinary offices. While available as an injectable liquid, manufacturers mostly sell it as a powder or as pills. Other names for ketamine include K, Special K, or Cat Valium.
- ***Phencyclidine* (PCP)** was developed in the 1950s as a general anesthetic for surgery. It's no longer used for this purpose due to serious side effects. While PCP can be found in a variety

of forms, including tablets or capsules, liquid and white crystal powder are the most common forms. PCP has various other names, such as Angel Dust, Hog, Love Boat, and Peace Pill.

- **Salvia divinorum (salvia)** is a plant common to southern Mexico and Central and South America. Other names for salvia are Diviner's Sage, Maria Pastora, Sally-D, and Magic Mint.

## Salvia

How do people use hallucinogens?

People use hallucinogens in a wide variety of ways, as shown in the following chart:

	Ayahuasca	DMT	LSD	Peyote	Psilocybin	DXM	Ketamine	PCP	Salvia
Swallowing as tablets or pills		✓	✓				✓	✓	
Swallowing as liquid		✓	✓	✓					
Consuming raw or dried	✓			✓	✓				✓
Brewing into tea	✓			✓	✓				✓
Snorting							✓	✓	
Injecting							✓	✓	
Inhaling, vaporizing, or smoking		✓						✓	✓
Absorbing through the lining in the mouth using drug-soaked paper pieces			✓						

## How do hallucinogens affect the brain?

Research suggests that hallucinogens work at least partially by temporarily disrupting communication between brain chemical systems throughout the brain and spinal cord. Some hallucinogens interfere with the action of the brain chemical serotonin, which regulates:

- mood
- sensory perception
- sleep
- hunger
- body temperature
- sexual behavior
- muscle control

Other hallucinogens interfere with the action of the brain chemical glutamate, which regulates:

- pain perception
- responses to the environment
- emotion
- learning and memory

### Short-Term Effects

The effects of hallucinogens can begin within 20 to 90 minutes and can last as long as 6 to 12 hours. Salvia's effects are more short-lived, appearing in less than 1 minute and lasting less than 30 minutes. Hallucinogen users refer to the experiences brought on by these drugs as "trips," calling the unpleasant experiences "bad trips." Along with hallucinations, other short-term general effects include:

- increased heart rate
- nausea
- intensified feelings and sensory experiences
- changes in sense of time (for example, time passing by slowly)

Specific short-term effects of some hallucinogens include:

- increased blood pressure, breathing rate, or body temperature
- loss of appetite
- dry mouth
- sleep problems
- mixed senses (such as "seeing" sounds or "hearing" colors)
- spiritual experiences
- feelings of relaxation or detachment from self/environment
- uncoordinated movements
- excessive sweating
- panic
- *paranoia*—extreme and unreasonable distrust of others
- *psychosis*—disordered thinking detached from reality

### Long-Term Effects

Little is known about the long-term effects of hallucinogens. Researchers do know that ketamine users may develop symptoms that include ulcers in the bladder, kidney problems, and poor memory. Repeated use of PCP can result in long-term effects that may continue for a year or more after use stops, such as:

- speech problems
- memory loss
- weight loss
- anxiety
- depression and suicidal thoughts



Though rare, long-term effects of some hallucinogens include the following:

- **Persistent psychosis**—a series of continuing mental problems, including:
  - visual disturbances
  - disorganized thinking
  - paranoia
  - mood changes
- **Flashbacks**—recurrences of certain drug experiences. They often happen without warning and may occur within a few days or more than a year after drug use. In some users, flashbacks can persist and affect daily functioning, a condition known as *hallucinogen persisting perceptual disorder* (HPPD). These people continue to have hallucinations and other visual disturbances, such as seeing trails attached to moving objects.
- Symptoms that are sometimes mistaken for other disorders, such as stroke or a brain tumor

### **What are other risks of hallucinogens?**

Other risks or health effects of many hallucinogens remain unclear and need more research.

Known risks include the following:

- Some psilocybin users risk poisoning and possibly death from using a poisonous mushroom by mistake.
- High doses of PCP can cause seizures, coma, and death, though death more often results from accidental injury or suicide during PCP intoxication. Interactions between PCP and depressants such as alcohol and benzodiazepines (prescribed to relieve anxiety or promote sleep—alprazolam [Xanax<sup>®</sup>], for instance) can also lead to coma.
- Some bizarre behaviors resulting from hallucinogens that users display in public places may prompt public health or law enforcement personnel intervention.
- While hallucinogens' effects on the developing fetus are unknown, researchers do know that mescaline in peyote may affect the fetus of a pregnant woman using the drug.

### **Are hallucinogens addictive?**

Evidence indicates that certain hallucinogens can be addictive or that people can develop a tolerance to them. Use of some hallucinogens also produces tolerance to other similar drugs. For example, LSD is not considered an addictive drug because it doesn't cause uncontrollable drug-seeking behavior. However, LSD does produce tolerance, so some users who take the drug repeatedly must take higher doses to achieve the same effect. This is an extremely dangerous practice, given the unpredictability of the drug. In addition, LSD produces tolerance to other hallucinogens, including psilocybin.

On the other hand, PCP is a hallucinogen that can be addictive. People who stop repeated use of PCP experience drug cravings, headaches, and sweating as common withdrawal symptoms. Scientists need more research into the tolerance or addiction potential of hallucinogens.

## How can people get treatment for addiction to hallucinogens?

There are no government-approved medications to treat addiction to hallucinogens. While inpatient and/or behavioral treatments can be helpful for patients with a variety of addictions, scientists need more research to find out if behavioral therapies are effective for addiction to hallucinogens.

### Points to Remember

- Hallucinogens are a diverse group of drugs that alter perception, thoughts, and feelings. They cause *hallucinations*, or sensations and images that seem real though they are not. Some hallucinogens also cause users to feel out of control or disconnected from their body and environment.
- People use hallucinogens in a wide variety of ways, including smoking, snorting, and absorbing through the lining in the mouth.
- Hallucinogens interfere with actions of brain chemicals responsible for functions that include:
  - mood
  - sensory perception
  - sleep
  - body temperature
  - muscle control
  - pain perception
  - memory
- The effects of hallucinogens can begin within 20 to 90 minutes and can last as long as 6 to 12 hours.
- Along with hallucinations, other short-term general effects of hallucinogens include:
  - increased heart rate
  - nausea
  - intensified feelings and sensory experiences
  - changes in sense of time
- *Persistent psychosis* and *flashbacks* are two long-term effects associated with some hallucinogens.
- Evidence indicates that certain hallucinogens can be addictive or that people can develop a tolerance to them.