

Information for Professionals

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Introduction

Hallucinogens, the best known of which is LSD, are drugs that dramatically affect perception, emotions, and mental processes. They distort the senses and can cause hallucinations—seeing or hearing things that are not actually there. More often, however, they cause lesser distortions of real objects and events.

Hallucinogens are sometimes called “psychedelic drugs” and are most often used for their so-called “mind-expanding” effects or to produce mystical and religious experiences. These are probably the effects that have been sought by users dating back as far as 1600 B.C.E. (Before Common Era) and continued in the use of peyote by members of the Native American Church. In the U.S., but not Canada, peyote can be used legally in the religious ceremonies of this church.

Additional reasons for the popularity of hallucinogens among other North Americans in the 1960s and 70s probably resulted from rebellion against authority because of deep divisions between the generations in society. Also, many folk heroes of the time, including pop singers and some intellectuals, such as Harvard professors Timothy Leary and Richard Alpert, openly supported use.

Over the years, a small number of therapists have suggested that hallucinogens may have value in the treatment of psychiatric disorders. There is, however, no currently accepted medical use for these drugs.

A wide variety of drugs are classed as hallucinogens; the more common ones will be discussed individually. Hallucinogens made synthetically include LSD, PCP, DMT, and those with the amphetamine chemical structure—MDA, MDMA (Ecstasy), and STP (DOM). Hallucinogens obtained from plants include mescaline from the peyote cactus, and psilocybin from “magic” mushrooms. Other plants containing hallucinogens: morning glory seeds, jimson weed, and nutmeg. Cannabis (marijuana) is not usually included in this group of drugs; however, in very large doses it can produce hallucinations.

There is considerable deception in the sale of hallucinogens. Users never really know what drug or how much of a particular drug they are taking. Also, because they are usually prepared in illegal, “underground” labs

specifically for the illicit drug market, they can be contaminated with other very toxic chemicals.

Hallucinogens are usually taken orally, but are sometimes smoked, sniffed, or injected.

Drug effects: General

The effect of any drug depends on the drug, the set, and the setting. The specific drug, the amount, and how it is taken all determine the effect. The set, what the person expects, and previous exposure of the body to this and other drugs can alter effects. The setting, or location, user’s mental state, and other drugs being used, can also influence drug effects.

The effect of taking an hallucinogen can be extremely variable and can range from ecstasy to terror. During one episode, the user is likely to experience a variety of psychic and emotional reactions. Hallucinations are most common at high doses, whereas low doses tend to produce changes in mood and lesser changes in perception. Also, thinking and concentration may be difficult and short term memory impaired.

These drugs are not usually taken to cause hallucinations, although altered sensory perception is clearly part of the drug experience or “trip.” Hearing, smell, and vision may be intensified or merged, and sense of time and space may also be affected. Users may experience depersonalization, feeling they are outside themselves observing what is happening or actually feeling like they are off the earth, on a so-called “cosmic trip.” Some users describe a sense of mind expansion or self-insight, others report aesthetic experiences or even mystical or spiritual sensations. In general, the experience is unique to each person.

These may be pleasant experiences for some users. At other times, the same user may find them very unpleasant and for some users they may cause considerable distress and even panic. The resulting, so-called “bad trip,” may in part be due to the great variation in content of illicit drugs, but also can occur when the same dose of a pure drug is taken. “Trips” are often taken in the company of experienced users who can help deal with any unpleasant reactions that may occur. Prolonged serious depression, anxiety, and even psychotic reactions can result.

“Flashbacks,” recurrences of the previous drug experience without taking the drug again, can occur days, weeks, or even months after use. They can be pleasant or very disturbing; they usually do not continue for longer than 6 months. Users, however, often describe almost any future unusual sensation as a flashback.

Drugs effects: Specific

LSD (lysergic acid diethylamide, “acid,” blotter)

LSD is a very potent hallucinogen. It can be made from lysergic acid which is found in ergot, a fungus that grows on rye and other grains. Most “street” LSD is prepared synthetically in illicit labs.

Pure LSD is a white, odorless, powder. The usual dose or “hit” of LSD is in the range of 50 to 150 micrograms, but can be as high as 700 micrograms. (There are 1000 micrograms in a milligram, 1000 milligrams in a gram, and approximately 30 grams in an ounce.) Because this amount is almost invisible, it is mixed with other substances such as sugar and sold in capsules, tablets or liquid. It can also be dissolved in liquid and spotted on gelatin sheets or blotting paper, hence the street names “window pane” and “blotter.”

LSD is usually taken orally, but can be inhaled or injected. As with any injection, use of needles that are not sterile can result in infections, and sharing needles with others can spread hepatitis and AIDS (acquired immune deficiency syndrome).

LSD Effects

LSD is not only the best known hallucinogen, it is the one about which the most is known. The above description of the general effects of these drugs, applies particularly to LSD. In discussing the other hallucinogens, it will serve as the prototype.

The effects of LSD usually begin within an hour and last up to 12 hours. Physical effects appear first, they include: numbness, muscle weakness and trembling; increased blood pressure, heart rate, and temperature; dilated pupils; impaired motor skills and coordination; nausea; and, rarely, seizures.

In addition to the acute effects on perception, thought, and mood, chronic LSD use may result in prolonged depression and anxiety.

Although no deaths are known to have been caused by the direct effects of LSD in humans, deaths resulting from accidents and suicides related to LSD use have been reported.

PCP (phencyclidine, angel dust, horse tranquillizer, hog)

PCP was first used as an anesthetic for surgery in humans, then as an animal anesthetic and tranquillizer (horse tranquillizer). It is no longer used and is now produced only in illicit labs. It is one of the most dangerous and unpredictable street drugs. Despite

this fact, it continues to be a not infrequently encountered street drug. The incidence of use is unknown as it is included with other hallucinogens in surveys of drug use.

Pure PCP is a white powder. It is sold on the street as a powder, liquid, capsule or tablet and is often passed off as LSD, THC, mescaline, or other drugs. A dose of 1 to 5 mg is enough to cause a high; when analyzed, street samples have contained from 1.3 to 81 mg. PCP is usually mixed with tobacco, marijuana, or dried parsley and the mixture is then smoked, but it may also be sniffed, swallowed, or injected.

PCP Effects

The effects of PCP can vary greatly even when comparable doses are taken. In addition, the strength of street samples is extremely variable, so the amount taken can also vary greatly. When it is presumed to be some other drug with relatively mild effects, such as mescaline or peyote, the stonger and unpredictable effects of PCP can be distressing.

The short term effects of low doses of PCP appear soon after taking a single dose and disappear within a few hours or days. The effects of high doses, however, have lasted from 10 days to two weeks.

The physical effects of low doses of PCP (5 mg or less) include rapid breathing, increased blood pressure and heart rate, a marked rise in temperature, and numbness of the arms and legs. At higher doses of 10 mg or more, a rapid drop in blood pressure, heart rate, and respiration occurs with nausea, vomiting, blurred vision, dizziness, and decreased awareness of pain. Larger doses can cause convulsions, coma, and death. The user’s ability to concentrate, think logically, and speak become impaired. Marked changes in perception, thought, and mood similar to those produced by LSD can occur. Euphoria is experienced by many users, while others feel threatened and because of fear, anxiety, or panic, can behave violently.

The effects of higher doses include delusions, hallucinations (mainly auditory), and a sensation of distance from one’s environment. Severe psychological disorganization and acute toxic psychosis can result. Deaths linked to the psychological effects include accidental drownings, suicides, homicides, and car crashes.

The long term effects of PCP are not well documented as it is not often used on a regular basis. As with other hallucinogens, “flashbacks” can occur. Persistent speech problems, memory loss, severe anxiety and depression, and social withdrawal have also been seen following prolonged use.

MDA (methylenedioxyamphetamine)

The structure of MDA is similar to both mescaline and the amphetamines. A brown or white powder, MDA is sold loose, in capsules, or as an amber liquid. The common dose is 100 mg which is usually swallowed. Other drugs such as PCP are frequently sold as MDA. Produced in labs specifically for the illicit drug market, there is no currently accepted medical use for MDA.

The effects of MDA occur in 30 to 60 minutes and last about 8 hours. Users report a sense of well-being along with heightened tactile sensations and emotions. Higher doses produce effects similar to those of LSD, including hallucinations or sensory distortions. Physical effects resemble those of amphetamines and include dilated pupils, high blood pressure, and dry nose and throat. Overdoses can cause death.

MDMA **(Ecstasy, XTC, 3,4-methylenedioxyamphetamine)**

MDMA has a structure similar to MDA and is sold as a white or off-white powder. It is usually taken orally in doses of 75 to 100 mg. Like MDA, it is produced in labs specifically for the illicit drug market and there is no medical use. The effects are similar to MDA, but somewhat milder and of shorter duration.

STP(DOM) (2,5-dimethoxy-4-methylamphetamine)

Similar to MDA but more potent (usual dose 3-10 mg) and longer acting (16 to 24 hrs.), STP is rarely encountered on the street anymore.

PMA (paramethoxyamphetamine)

Although rare, PMA is one of the most dangerous hallucinogens. Sold as a beige, white, or pink powder, PMA is often misrepresented as MDA. However, at doses considered safe for MDA, PMA is highly toxic.

The hallucinogenic effects of PMA are similar to LSD. Physical effects of PMA include racing pulse, high blood pressure, increased and laboured breathing, high fever, erratic eye movements, muscle spasm, and vomiting. At high doses, convulsions, coma, and death can result.

Mescaline or Peyote (trimethoxyphenethylamine)

Mescaline is prepared from the Mexican peyote cactus or synthesized chemically. It is used legally in the U.S., but not in Canada, as a sacrament by members of the Native American Church of North America. Mescaline is usually taken orally, can be inhaled by smoking ground peyote "buttons," or, more rarely, is injected. The usual dose is 300 to 500 mg. Most samples that have been analyzed actually contain PCP, LSD or some substance other than mescaline.

Psychic effects similar to other hallucinogens appear slowly and last 10 to 18 hours. Reports of mystical or religious experiences are common, which is not surprising considering the association of mescaline with religious events. Physical effects include dilated pupils, fever, and nausea and vomiting. High doses can cause headache, dry skin, low blood pressure and slowing of heart rate and breathing.

PSILOCYBIN (magic mushrooms)

Psilocybin, and the related chemical psilocin, are the active ingredients in several species of mushrooms and other fungi that grow throughout Canada. Most belong to the genus *Psilocybe*. Psilocybin is chemically related to both LSD and DMT.

Psilocybin is sold as mushrooms or in capsules containing powder of various colours. When analyzed, it usually turns out to be PCP or LSD. The common dose is from 5 mg to 60 mg taken orally.

The effects of psilocybin are usually felt after about half an hour, and last for several hours. Low doses produce mild psychic effects while larger doses cause LSD-like effects. As with mescaline, users often report mystical or religious experiences. Physical effects can include dizziness, lightheadedness, abdominal discomfort, numbness of the tongue and mouth, nausea, anxiety, and shivering.

DMT (dimethyltryptamine)

A synthetic chemical resembling psilocin, DMT is also present in some other plant substances. Marijuana or parsley are often soaked in a solution of DMT, then dried and smoked.

The effects of DMT occur rapidly and, unlike other hallucinogens, last for only 30 to 60 minutes—hence the street name "businessman's lunch." Anxiety reactions and panic states tend to be quite common possibly because of the rapid onset of the drugs potent effects.

Other Hallucinogens **(Morning glory seeds, Nutmeg, Jimson weed)**

A variety of other plants contain hallucinogens. Morning glory seeds contain lysergic acid amide which is related to LSD, but less potent. Effects similar to those of LSD begin 30 to 90 minutes after 100 or more of the seeds are chewed. Most seeds are now coated with insecticides and/or herbicides that can cause considerable discomfort if ingested.

Nutmeg powder, the common household spice, is eaten and sometimes "snorted" for its psychedelic effects. Low doses can produce mild euphoria, lightheadedness, and stimulation. Larger doses can cause rapid heartbeat, agitation, vomiting, and hallucinations. Recovery is slow and often involves an unpleasant hangover. Although readily available, it is generally used only when other hallucinogens are not available.

Jimson weed ("*Datura stramonium*") and deadly nightshade ("*Atropa belladonna*") both contain atropine and other belladonna alkaloids. Eating the leaves or berries of these plants causes marked dryness of the mouth, dilated pupils, hot dry skin, blurred vision, raised body temperature, rapid heartbeat, constipation, and difficulty urinating. Larger doses produce intense stimulation of the nervous system including hallucinations, disorientation, confusion, agitation, and sometimes convulsions. A variety

of prescription drugs belonging to this group are used to decrease stomach motility and secretions, dilate the pupils, relax smooth muscles and treat the tremors associated with Parkinsonism.

Tolerance and dependence

Tolerance to the hallucinogen drugs is not well understood. As usually defined, tolerance—the need for more drug to produce the same effect—does not develop with repeated use of most hallucinogens. However, after daily use for as little as 3 or 4 days, no psychic effects will be experienced if any of these drugs are used. The effects return if no use occurs for several days. This is not a true pharmacological tolerance as it cannot be overcome with larger doses of the drug. The exception might be PCP since regular users often increase their intake in order to maintain the “high.” Some regular users of hallucinogens become psychologically dependent on one of these drugs and the need to keep taking it becomes a compulsion. Hallucinogens do not appear to cause physical dependence since withdrawal reactions have not been observed, even after long term use.

Hallucinogen and pregnancy

Regular LSD use during pregnancy is associated with spontaneous abortions or fetal abnormality. However, in most cases, the mothers have also taken other drugs that could have caused these effects. Studies suggesting that LSD use causes chromosome damage have yet to be confirmed.

Little is known about the effects of using other hallucinogens during pregnancy.

Who uses hallucinogens?

A 1993 survey of Alberta students (aged 12 to 18) found that, 10% had used hallucinogens at least once in the past 12 months, and 1% had used them at least 20 times. Among AADAC client admissions, less than 1% of adults (18 years and older) and 2.5% of adolescents (12-17 years) reported hallucinogens as their primary drug of concern in 1993/94

Hallucinogens and the law

With a few exceptions, all of the hallucinogens are classified as “restricted drugs” and listed in Schedule H of Canada’s Food and Drugs Act, Part 4. PCP, however, falls under the Narcotic Control Act. Morning glory seeds, nutmeg, and jimson weed are not subject to any legal restrictions in Canada.

Because the “restricted drugs” are considered to have no known medical use, possession and sale are completely prohibited except for experimental purposes. Less serious charges of possession, tried by summary conviction, carry a penalty of a fine up to \$1,000 and/or six months

imprisonment for a first offence. For subsequent offences, the penalty is a fine of up to \$2,000 and/or one year imprisonment.

The penalty for possession is up to \$5,000 and/or three years imprisonment when the charges are considered more serious and are tried by indictment.

Trafficking and possession for the purpose of trafficking, if tried by summary conviction, carry a maximum penalty of 18 months, and, if tried by indictment, up to 10 years imprisonment.

Under the *Narcotic Control Act*, unlawful possession of PCP is a criminal offence. The penalty for a first offence tried by summary conviction is a fine up to \$1,000 and/or six months imprisonment, and for subsequent offences \$2,000 and/or one year. Tried by indictment the penalty is up to seven years imprisonment.

Trafficking and possession for the purpose of trafficking PCP are indictable offences punishable by up to life imprisonment. Importing and exporting are also

Additional reading:

1. Cox, T. C., Jacobs, M. R., LeBlanc, A. E., & Marshman, J. A. (1987). *Drugs & Drug Abuse: A reference text*. (2nd ed.). Toronto: Addiction Research Foundation.

For more information about Hallucinogens and available treatment services, contact your local AADAC office.

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