



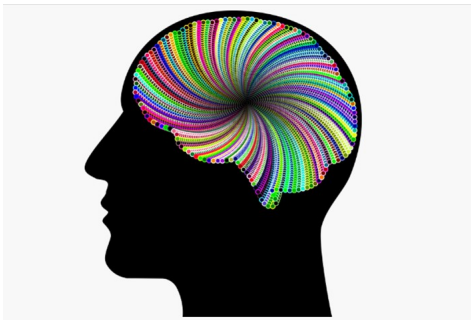
ToxTalks:

A Bulletin for Healthcare Professionals Who Manage Poisoned Patients

Blue Ridge Poison Center

University of Virginia Health

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Lysergic acid diethylamide (LSD)

Overview

Lysergic acid diethylamide (LSD) is a potent, synthetic hallucinogen drug first synthesized in 1938. LSD remains classified as schedule 1 by the DEA, defined as having high abuse potential, however, there are legislative efforts for its decriminalization in many states. It is being increasingly researched as a treatment for depression, PTSD, anxiety, and suicidality. While research interest in the use of LSD as a potential psychiatric treatment has increased recently, recreational use in the United States is also increasing. One study reported that LSD use increased by 213% from 2002 to 2018. The long-term effects of LSD use remain unclear as there is not sufficient research.

Pharmacology

LSD is an ergoline derivative that exerts most of its psychoactive effects by agonism of serotonin 5HT-2A receptors but also has agonism at the dopamine D2 receptor. A typical dose is between 40-500 micrograms. Initial drug effect is seen in 30-90 minutes but peak drug levels are seen at 1-4 hours after ingestion and half-life is estimated to be around 5 hours. This means most users experience effects for 8-12 hours depending on dosage.

Available Forms

LSD is typically administered as paper impregnated with liquid drug, known as “blotter paper”. Pure LSD is an odorless, colorless powder that is dissolved in water and then dripped onto the paper. The paper is then placed into the mouth where LSD is absorbed through the oral mucosa. It has also been administered in other forms such as liquid, powder, gelatin, and tablets. Of note, many adulterants have been found when these products are analyzed.

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Clinical Effects

Most hallucinogen users do not seek medical attention unless they experience unintended effects. LSD induces potent visual and auditory hallucinations and an altered state of consciousness. Most users experience elevated mood and euphoria though unfortunately some users may experience intensely distressful symptoms of anxiety, fear, panic, and paranoia. These negative experiences are commonly referred to as “bad trips”. While the risk may depend on the setting in which LSD is imbibed, the psychological effect of LSD and its hallucinations can be unpredictable. While many of its physical reactions are dependent on its psychological effects, LSD use results in mydriasis (pupillary dilation), increased alertness, decreased reaction time, tachycardia, decreased appetite, diaphoresis, xerostomia (dry mouth), bruxism (jaw clenching), and hyperreflexia. There are no documented human fatalities from LSD toxicity though deaths have been reported from trauma or positional asphyxia while under the influence of LSD.

The potent effects of LSD can exacerbate preexisting psychiatric illness and can cause long term psychiatric illness in those thought to be predisposed to or having unknown, compensated psychiatric illness. Some users have persistent hallucinations after LSD use, typically visual hallucinations, which can lead to impairment of functioning known as hallucinogen persisting perception disorder (HPPD).

Diagnostic Evaluation

LSD is not tested for on routine urinary drug screens. While it can be detected with more high-performance analytical testing such as liquid or gas chromatography, these tests are rarely clinically useful. HPPD diagnostic criteria

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can be found in the DSM 5.

Management

Severe anxiety, dysphoria, paranoia, and agitation can be managed with benzodiazepines. Antipsychotic agents are believed to be less useful in acute toxicity and may have adverse psychological effects. Gastrointestinal decontamination such as activated charcoal does not typically have a role as the substance is rapidly absorbed through the oral mucosa.

Summary

Overall, LSD use is becoming more common both as an experimental and recreational drug. While most users do not require medical attention, those experiencing a “bad trip” or with underlying psychiatric illnesses can have significant adverse effects. Most acute intoxications can be managed with benzodiazepines, while long-term psychiatric effects may require antipsychotic therapy. The long-term effects of the complex interaction of neurotransmitters and LSD is not known due to a paucity of available research.

