

# DrugFacts

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## Salvia

Salvia (*Salvia divinorum*) is an herb common to southern Mexico and Central and South America. The main active ingredient in Salvia, salvinorin A, is a potent activator of kappa opioid receptors in the brain.<sup>1,2</sup> These receptors differ from those activated by the more commonly known opioids, such as heroin and morphine.

Traditionally, *S. divinorum* has been ingested by chewing fresh leaves or by drinking their extracted juices. The dried leaves of *S. divinorum* can also be smoked as a joint, consumed in water pipes, or vaporized and inhaled. Although Salvia currently is not a drug regulated by the Controlled Substances Act, several States and countries have passed legislation to regulate its use.<sup>3</sup> The Drug Enforcement Agency has listed Salvia as a drug of concern and is considering classifying it as a Schedule I drug, like LSD or marijuana.

### Health/Behavioral Effects

People who abuse salvia generally experience hallucinations or “psychotomimetic” episodes (a transient experience that mimics a psychosis).<sup>4,5</sup>

Subjective effects have been described as intense but short-lived, appearing in less

than 1 minute and lasting less than 30 minutes. They include psychedelic-like changes in visual perception, mood and body sensations, emotional swings, feelings of detachment, and importantly, a highly modified perception of external reality and the self, leading to a decreased ability to interact with one's surroundings.<sup>5</sup> This last effect has prompted concern about the dangers of driving under the influence of salvinorin. The long-term effects of Salvia abuse have not been investigated systematically. Recent experiments in rodents demonstrated deleterious effects of salvinorin A on learning and memory.<sup>6</sup>

### Extent of Use

NIDA's Monitoring the Future Survey of 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders asked about salvia abuse for the first time in 2009—5.7 percent of high school seniors reported past year use (greater than the percent reporting ecstasy use). And according to the latest MTF figures the use of Salvia reported by 8<sup>th</sup> graders remained unchanged from 2011 to 2012 at 1.4 percent. Among 10<sup>th</sup> and 12<sup>th</sup> graders there was a decline—2.5 percent of 10<sup>th</sup> graders and 4.4 percent of 12<sup>th</sup> graders reported past year abuse.

Although information about this drug is limited, its abuse is likely driven by drug-related videos and information on Internet sites.<sup>3</sup> Because of the nature of the drug's effects—its use may be restricted to individual experimentalists, rather than as a social or party drug<sup>5</sup>

## Learn More

For more information on the effects of hallucinogenic drugs, see NIDA's *Research Report on Hallucinogens and Dissociative Drugs* at [www.nida.nih.gov/ResearchReports/hallucinogens/hallucinogens.html](http://www.nida.nih.gov/ResearchReports/hallucinogens/hallucinogens.html).

For more information on *Salvia divinorum* and the Controlled Substances Act, visit [http://www.deadiversion.usdoj.gov/drugs\\_concern/salvia\\_d.pdf](http://www.deadiversion.usdoj.gov/drugs_concern/salvia_d.pdf).

Complete MTF survey results are available at [www.monitoringthefuture.org](http://www.monitoringthefuture.org). For more information on the survey and its findings, also visit [www.drugabuse.gov/related-topics/trends-statistics/monitoring-future](http://www.drugabuse.gov/related-topics/trends-statistics/monitoring-future).

## Citations

1 Chavkin, C., Sud, S., Jin, W. et al. *Salvinorin A, an active component of the hallucinogenic sage Salvia divinorum is a highly efficacious kappa-opioid receptor agonist: structural and functional considerations. J Pharmacol Exp Ther.* 308:1197–203, 2004.

2 Harding, W.W., et al. *Salvinicins A and B, new neoclerodane diterpenes from Salvia divinorum. Organic Letters.* 7:3017–3020, 2005.

3 [http://www.deadiversion.usdoj.gov/drugs\\_concern/salvia\\_d.pdf](http://www.deadiversion.usdoj.gov/drugs_concern/salvia_d.pdf). Accessed September 24, 2007.

4 Roth, B.L., et al. *Salvinorin A: a potent naturally occurring non-nitrogenous kappa opioid selective agonist. Proc Natl Acad Sci.* 99:11934–11939, 2002.

5 Gonzalez, D., et al. *Pattern of use and subjective effects of Salvia divinorum among recreational users. Drug Alcohol Depend.* 85:157–162, 2006.

6 Braida D, Donzelli A, Martucci R, Capurro V, Sala M. *Learning and memory impairment induced by salvinorin A, the principal ingredient of Salvia divinorum, in wistar rats. Int J Toxicol.* 2011 Dec;30(6):650-61.

## About the Survey

Since 1975, the MTF survey has measured drug, alcohol, and cigarette use and related attitudes among 12th graders, nationwide. In 1991, 8th and 10th graders were added to the survey. Survey participants report their drug use behaviors across three time periods: lifetime, past year, and past month. Overall, 44,449 students from 395 public and private schools in the 8th, 10th, and 12th grades participated in the 2012 survey.

The survey is funded by NIDA and conducted by the University of Michigan. Results from the survey are released each December.