

## 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 delusional episodes that mimic psychosis.<sup>4,5</sup> Subjective effects have been described

as intense but short-lived; they appear in less than 1 minute and last less than 30 minutes. Effects 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, which leads 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.

### **Extent of Use**

There are no available estimates of Salvia abuse, but a recent increase in Salvia-related media reports and Internet traffic suggest the possibility of an increase in the level of Salvia abuse in the United States and Europe.<sup>4</sup> Although information about the user population is limited, users appear to be mostly younger adults and adolescents who are influenced by promotions of the drug on Internet sites.<sup>3</sup> Rather than being used as a party drug, Salvia seems to appeal to individual experimentalists.<sup>5</sup>

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 [www.deadiversion.usdoj.gov/drugs\\_concern/salvia\\_d/salvia\\_d.htm](http://www.deadiversion.usdoj.gov/drugs_concern/salvia_d/salvia_d.htm).

For street terms searchable by drug name, street term, cost and quantities, drug trade, and drug use, visit [www.whitehousedrugpolicy.gov/streetterms/default.asp](http://www.whitehousedrugpolicy.gov/streetterms/default.asp).

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<sup>1</sup> 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.

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

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

<sup>4</sup> 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.

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