

SALVIA DIVINORUM and SALVINORIN A

(Street Names: Maria Pastora, Sage of the Seers, Diviner's Sage, Salvia, Sally-D, Magic Mint)

Introduction:

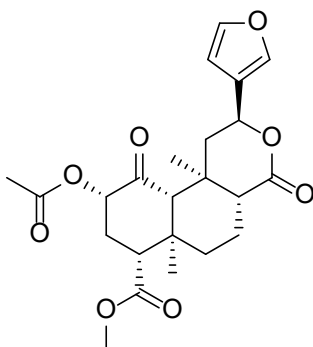
Salvia divinorum is a perennial herb in the mint family native to certain areas of the Sierra Mazateca region of Oaxaca, Mexico. *S. divinorum* is grown domestically and imported from Mexico and Central and South America. The plant can grow to over three feet in height, has large green leaves, hollow square stems, and white flowers with purple calyces. *S. divinorum* has been used by the Mazatec Indians for its ritual divination and healing. Salvinorin A has been identified as the active constituent of *S. divinorum*. The extracts of *S. divinorum* are used as a recreational drug due to their psychoactive effects.

Licit Uses:

S. divinorum and its active constituent salvinorin A are not approved for medical use in the United States.

Chemistry:

Salvinorin A also known as divinorin A [methyl (2*S*,4*aR*,6*aR*,7*R*,9*S*,10*aS*,10*bR*)-9-acetoxy-2-(furan-3-yl)-6*a*,10*b*-dimethyl-4,10-dioxododecahydro-2*H*-benzo[*f*]isochromene-7-carboxylate]; CAS: 83729-01-5] is a neoclerodane diterpene found primarily in the leaves and, to a lesser extent, in the stems of the plant. The chemical structure of salvinorin A is shown below.



Pharmacology:

Salvinorin A is the main active diterpene responsible for the hallucinogenic effects of *S. divinorum*. Scientific studies show that salvinorin A is a potent and selective kappa opioid receptor agonist. Salvinorin A produces hallucinogenic effects and dysphoria. Unlike other classic hallucinogens, salvinorin A does not activate the serotonin 2A receptor.

Several studies have reported the effects of using either plant material or salvinorin A. Psychic effects include perceptions of bright lights, vivid colors and shapes, as well

as body movements or object distortions. Other effects include dysphoria, uncontrolled laughter, a sense of loss of body, overlapping realities, and hallucinations. Adverse effects may include incoordination, dizziness, and slurred speech. Chronic use of salvinorin A elicits subjective symptoms of withdrawal characterized by irritability, malaise, and anxiety.

Illicit Uses:

Salvinorin A and *S. divinorum* products are abused for their ability to evoke hallucinogenic effects. In the United States, *S. divinorum* plant material is typically either chewed or smoked for its psychoactive effects. The Internet is used for the promotion and distribution of *S. divinorum*. It is sold as seeds, plant cuttings, whole plants, fresh and dried leaves, extract-enhanced leaves of various strengths (e.g., 5X, 10X, 20X, 30X), and liquid extracts purported to contain salvinorin A. These products are also sold at local shops (e.g., head shops and tobacco shops).

User Population:

The 2024 National Survey on Drug Use and Health estimated that approximately 5.5 million (1.9%) people aged 12 or older have used *S. divinorum* in their lifetime.

The Monitoring the Future survey first included a question about salvia in 2009, when 5.7% of 12th graders indicated using salvia in the previous 12 months. In 2022, 0.8% of 8th, 10th, and 12th graders indicated using salvia in the previous 12 months.

Illicit Distribution:

DEA's National Forensic Laboratory Information System (NFLIS) Drug database collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state, and local forensic drug laboratories. The table below shows the number of reports of salvinorin A and *S. divinorum* to NFLIS-Drug for selected years and the total over all time:

Substance / Year	2012	2016	2020	2024	Total
Salvinorin A	104	28	12	9	712
<i>S. divinorum</i>	3	3	0	0	25

Control Status:

S. divinorum and salvinorin A are not controlled under the CSA.