

## **SALVIA DIVINORUM AND SALVINORIN A**

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

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### **Introduction:**

*Salvia divinorum* is a perennial herb in the mint family native to certain areas of the Sierra Mazateca region of Oaxaca, Mexico. The plant, which can grow to over three feet in height, has large green leaves, hollow square stems and white flowers with purple calyces, can also be grown successfully outside of this region. *Salvia divinorum* has been used by the Mazatec Indians for its ritual divination and healing. The active constituent of *Salvia divinorum* has been identified as salvinorin A. Currently, neither *Salvia divinorum* nor any of its constituents, including salvinorin A, are controlled under the federal Controlled Substances Act (CSA).

### **Licit Uses:**

Neither *Salvia divinorum* nor its active constituent salvinorin A has an approved medical use in the U.S.

### **Chemistry:**

Salvinorin A, also called Divinorin A, is believed to be the ingredient responsible for the hallucinogenic effects of *Salvia divinorum*. Chemically, it is a neoclerodane diterpene found primarily in the leaves, and to a lesser extent in the stems of the plant. Although several other substances have been isolated from the plant, none have been shown to be psychoactive.

### **Pharmacology:**

In the U.S., plant material is typically either chewed or smoked for its psychoactive effects. When chewed, the leaf mass and juice are maintained within the cheek area with absorption occurring across the lining of the oral mucosa (buccal). Effects first appear within 5 to 10 minutes. Dried leaves, as well as extract-enhanced leaves purported to be enriched with salvinorin A, are also smoked. Smoking pure salvinorin A, at a dose of 200-500 micrograms, results in effects within 30 seconds and lasts about 30 minutes.

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 and body or object distortions. Other effects include dysphoria, uncontrolled laughter, a sense of loss of body, overlapping realities, and hallucinations (seeing objects that are not present). Adverse physical effects may include incoordination, dizziness, and slurred speech.

Scientific studies show that salvinorin A is a potent and selective kappa opioid receptor agonist. Other drugs that act at the kappa opioid receptor also produce hallucinogenic effects and dysphoria similar to those produced by salvinorin A. Salvinorin A does not activate the serotonin 2A receptor, which mediates the effects of other schedule I hallucinogens.

### **Illicit Uses:**

Salvinorin A and *Salvia divinorum* products are abused for their ability to evoke hallucinogenic effects, which, in

general, are similar to those of other scheduled hallucinogenic substances.

*Salvia divinorum* is grown domestically and imported from Mexico and Central and South America. The Internet is used for the promotion and distribution of *Salvia 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:**

*Salvia divinorum* use is prevalent among recent or active drug users who have used other hallucinogens or stimulants. According to the 2020 National Survey on Drug Use and Health (SAMHSA), approximately 139,508 people reported using *Salvia divinorum* within the past year; among those that used *Salvia divinorum* within the past year, 9.8 % were 12-17 years old, and 43.78% were 18-25 years old.

### **Illicit Distribution:**

According to DEA's National Forensic Laboratory Information System (NFLIS) Drug database, the annual number of reports of *Salvia divinorum* or salvinorin A submitted by participating federal, state, and local forensic drug laboratories totaled six in 2019, 12 in 2020, four in 2021, and six in 2022.

### **Control Status:**

*Salvia divinorum* and salvinorin A are not currently controlled under the Controlled Substances Act.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section; Fax 571-362-4250, Telephone 571-362-3249, or Email [DPE@dea.gov](mailto:DPE@dea.gov).