

4-Methylmethcathinone (Mephedrone)

(Street Names: 4-MMC, meow meow, m-CAT, bounce, bubbles, mad cow)

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DEA/OD/ODE

Introduction

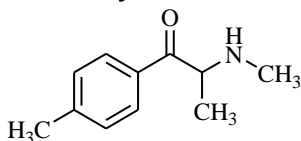
4-Methylmethcathinone (mephedrone) is a designer drug of the phenethylamine class and shares substantial structural similarities with methcathinone (Schedule I). Drugs from this class of compounds are known to produce central nervous system stimulation, psychoactivity and hallucinations.

Evidence from law enforcement indicates that the abuse of mephedrone as a recreational substance is widespread and growing. From 2009 to 2011, law enforcement agencies have documented mephedrone seizures throughout the United States. Mephedrone abuse has been associated with toxicity. Several cases of acute toxicity have been reported for the ingestion of mephedrone. Furthermore, deaths have been reported from the abuse of mephedrone.

Licit Uses

Mephedrone is not approved for medical use in the United States.

Chemistry



4-Methylmethcathinone
Molecular Formula: C₁₁H₁₅NO

The core chemical structure of mephedrone identifies it as a phenethylamine, and is related in chemical structure to methcathinone differing only by a methyl group (CH₃) on the ring. It is a solid at room temperature.

Pharmacology

Presently, there are a few published studies on the pharmacology of mephedrone. Studies have shown that mephedrone, like some schedule I stimulants, increases extracellular monoamines (serotonin and dopamine) concentration in rat brain. Increased monoamine concentration in the central nervous system is thought to be involved in the stimulant and hallucinogenic effects of these substances. Recent studies show that mephedrone increases locomotor activity in rats.

Because of the limited number of studies involving mephedrone, the pharmacology of mephedrone was also predicted using structure activity relationship (SAR) data available for other phenethylamines. Based on SAR analyses, the pharmacology of mephedrone would be expected to be similar to that of methcathinone, as well as other substances of the phenethylamine chemical class.

Individuals have presented at emergency departments in response to exposures to mephedrone. The adverse health effects reported for mephedrone are similar to those seen with other stimulant drugs. Adverse effects reported by abusers of mephedrone include increased heart rate, chest pain, agitation, irritability, dizziness, delusions, nose bleeding, nausea and vomiting. More notably, there has been a death in which mephedrone was ruled as the cause of death and there have been deaths in which mephedrone abuse was suspected or implicated.

According to self-reported drug users, the amounts for snorting mephedrone ranged from 25 to 75 milligrams but for oral administration it ranged from 150 to 250 milligrams. Following oral or nasal ingestions of mephedrone, users report that desired effects occur 15 to 45 minutes after administration.

User Population

Mephedrone is popular with youths in urban environments with males appearing to use synthetic cathinones more than females. Information also suggests that mephedrone is used by several population groups such as young adults, mid-to-late adolescents, and older adults.

Illicit Distribution

Mephedrone is sold over the Internet and at local retail shops where it is promoted as "a research chemical", "bath salts" or "plant food." The National Forensic Laboratory Information System (NFLIS) is a DEA database that collects scientifically verified data on drug items and cases submitted to and analyzed by state and local forensic laboratories. The System to Retrieve Information from Drug Evidence (STRIDE) provides information on drug seizures reported to and analyzed by DEA laboratories. Substances identified by forensic laboratories as mephedrone increased from 10 exhibits in 2009 to 231 exhibits in 2010. From January to August 2011, there are 160 reported exhibits of mephedrone. Law enforcement officials have encountered mephedrone in 32 states since 2009.

Control Status

As of October 21, 2011, mephedrone, its salts, isomers, and salts of isomers have been temporarily controlled in schedule I of the Controlled Substances Act.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section, Fax 202-353-1263, Telephone 202-307-7183, or E-mail ODE@usdoj.gov.