



ToxTalks:

A Bulletin for Healthcare Professionals Who Manage Poisoned Patients

Blue Ridge Poison Center

| University of Virginia Health

| August 2024

3,4-methylenedioxymethamphetamine (MDMA)



Overview

3,4-methylenedioxymethamphetamine (MDMA) is a potent stimulant with potential hallucinogenic properties commonly referred to as “ecstasy”, “X”, or “molly”. MDMA has been researched as an adjunct in the treatment of such conditions as post-traumatic stress disorder, depression, and anxiety but remains a schedule I controlled substance by the DEA. While use peaked in the late 1990s and early 2000s, MDMA continues to be a commonly used illicit substance. It is commonly associated with past parties called raves, clubs, and electronic music festivals. It is reportedly preferred for these activities due to its

properties as not only a stimulant but for the claim that it induces a feeling of communion and emotional connection amongst users.

Pharmacology

MDMA is a substituted amphetamine and works by increasing the release of neurotransmitters, predominantly dopamine, norepinephrine, and serotonin. MDMA is absorbed quickly and causes effects within 30 minutes of ingestion with peak concentrations between 1.5 and 3 hours after ingestion. Effects typically last 4-6 hours but can depend on the dose.

Available Forms

MDMA is often consumed as a crystalline powder often orally but can also be insufflated (snorted). It is also often present into tablet form and taken orally. Of note, the tablets particularly have been found to have many additional dangerous adulterants, including other stimulants, when analyzed and some tablets/powders lack MDMA entirely. Consumers can never be certain of what is contained within such illicit products.

Clinical Effects

The desired effects being sought by users of MDMA include euphoria, increased alertness, increased empathy,

Free. Fast. Expert help.
24 hours a day, 7 days a week.

POISON
HELP
1-800-222-1222

BRPC STAFF

Director

Christopher Holstege, MD

Nursing Director

John Gilday, MSN, NREMT-P

Medical Toxicologists

Andy Baer, MD
Nathan Charlton, MD
Aaron Frey, DO
Abigail Kerns, MD
Avery Michienzi, DO
Justin Rizer, MD

Medical Toxicology Fellows

Conner McDonald, MD
Sandra Nixon, MD
Scott Schmalzried, DO
Anna Zmuda, MD

Epidemiologist

Rita Farah, PharmD, MPH, PhD

Poison Specialists

Andy Anderson, RN
Stephanie Beach, BSN
Andre Berkin, BSN, CSPI
Michael Brookshire, BSN, CSPI
Jenni Goodwin, BSN, CSPI
Angela Hooe, FNP-C, BSN
Lisa Turner, BSN, CSPI
Scott Warlitzer, MSN

Public Health Educator

Kristin Wenger, MA, BS

Administrative Specialists

Heather Collier
Debbie Philkil

mydriasis (large pupils), gregariousness. Physical effects of the drug include tachycardia (fast heart rate), bruxism (grinding of the teeth), sweating, insomnia, loss of appetite. While most users of MDMA do not seek medical attention, severe dehydration and heat related illness have occurred due to its stimulant effects. Additionally, many cases of life-threatening hyponatremia (low blood sodium) have been reported and are thought to be due to the effect of MDMA in addition to consuming large amounts of water to prevent dehydration. Overdoses of MDMA leads to agitation, confusion, seizures, hypertension, muscle rigidity, rhabdomyolysis, and hyperthermia. It can also lead to serotonin syndrome, particularly if the patient is taking other drugs that work on the serotonin system.

Diagnostic Evaluation

MDMA is not present on most typical urine drug screens. While it may cause a positive result for amphetamines, false negatives have been reported. The typical amphetamine immunoassay screens also have a high rate of false positives. Urine drug screen results in patients using MDMA should be interpreted cautiously and rarely contribute to acute clinical care. The gold standard diagnostic testing for MDMA is gas chromatography – mass spectrometry which is rarely available acutely. Patients with concern for MDMA overdose should be evaluated for dehydration, rhabdomyolysis, and hyponatremia.

Management

Agitation and seizures should be managed with benzodiazepines. Hyperthermia, if present, should be treated with appropriate cooling measures. Antipsychotics can help with the management of paranoia or hallucinations but should not be the first line for sedation. Intravenous hydration should also be considered.

Summary

MDMA use continues in the United States despite numerous reports of adverse associated events. Toxicity can be treated with benzodiazepines and other supportive measures such as external cooling. Patients should be evaluated for hyponatremia. Please call the Blue Ridge Poison Center at 1-800-222-1222 if questions arise and you would like to speak with a clinician. You can also call the **dedicated healthcare provider hotline at 1-800-451-1428.**

