

Raves and Club Drugs

Raves have been occurring in large cities since the early 1990's. Once considered an underground phenomenon, raves are now held openly in large venues and are promoted on the Internet. Ethanol is usually not a part of the rave scene, thus opening these venues to teenagers who would not normally be allowed into dance clubs. Most ravers are in their late teens and early twenties. While house mix and techno music are part of the draw to these all night dance parties, the use of club drugs is a major component of the rave culture. Club drugs popular in the rave scene include MDMA (ecstasy), GHB, ketamine, nitrous oxide, mushrooms, and occasionally lysergic acid (LSD) and phencyclidine (PCP).

MDMA (3,4-methylenedioxymethamphetamine)

Synonyms: Ecstasy, XTC, E, Adam, M&M, Hug drug, Love drug

MDMA, a derivative of methamphetamine, possesses both amphetamine-like and hallucinogenic effects. It promotes the release of, and decreased reuptake of, serotonin, dopamine, and norepinephrine in the brain. The dopaminergic effects are responsible for MDMA's hallucinogenic properties. Prolonged use has been shown to damage serotonergic neurons in animal brains.

The desired effects of MDMA are many: increased energy, visual distortions, visual and tactile hallucinations, improved sensual and emotional overtones, empathy, closeness, and insight. However, there are many undesirable effects also: paranoia, anxiety, panic, psychosis, and depersonalization. Repetitive behavior is very common. Bruxism (teeth grinding) is nearly universal, accounting for why many ravers have an infant's pacifier in their mouth or hanging around their neck. Dehydration may occur because of elevated body temperature from the amphetamine, increased ambient temperature at the venue, and continuous exertion. Adverse occurrences include seizures, serotonin syndrome, acute SIADH, hypertension, hyperthermia both with and without hyperactivity, and urinary retention. Serious complications of MDMA use are liver failure from hyperthermia or from idiosyncratic reactions, status epilepticus, cerebral bleeding, arrhythmias, rhabdomyolysis, acute renal failure, and death.

Treatment consists of rapid external cooling, rehydration, and calming with benzodiazepines. Good supportive care is indicated for managing any of the above mentioned complications. Dantrolene is of uncertain value in hyperthermia. Avoid the use of neuroleptics and selective serotonin reuptake inhibitors as these may precipitate NMS or serotonin syndrome, respectively.

GHB (Gamma Hydroxybutyrate)

Synonyms: Georgia Home Boy, Easy Lay, Grievous Bodily Harm, Liquid Ecstasy, Vita G, Liquid G, Cherry Menth, Oxy-Sleep, Salty Water.

GHB directly stimulates the GHB receptor in the brain, and is also a partial agonist at the GABAB receptor. The GHB congeners 1,4-butanediol (1,4-BD) and gamma butyrolactone (GBL) are enzymatically converted into GHB and have the same effects. GHB acts primarily as a CNS depressant. It has been shown to increase growth hormone release in rats. At low doses, GHB inhibits dopamine release, while higher doses of GHB promote dopamine release.

GHB is promoted as a way to relieve depression or anxiety, to burn fat, to improve sleep, and as a “date rape” drug. Some people in the rave scene use GHB along with MDMA or other amphetamines as a way to take the edge off the anxiety they sometimes feel from the amphetamine. Because of its effect on growth hormone in rats, GHB has been touted as a “safe” alternative to anabolic steroids for weight lifters and bodybuilders who want to increase muscle mass. However, there are no human studies to support this theory. GHB does have the legitimate use as an investigational new drug (IND) for narcolepsy.

Adverse effects of GHB and its congeners include bradycardia, hypothermia, respiratory depression and apnea. When used as an anesthetic in the 1960’s, GHB was noted to cause clonic facial and extremity movements, but were without changes in concurrently preformed EEG’s. The typical presentation of GHB overdose is a young person presenting comatose with bradypnea or apnea, yet hemodynamically stable. The patient may have myoclonic activity, which can be interpreted as seizures. They are intubated for apnea or airway compromise, but within a few hours, awaken and are back to normal as if the entire episode never happened. They are usually discharged from the ER. Other causes of coma should be investigated if the patient remains comatose for more than a few hours after the supposed GHB ingestion. A withdrawal syndrome, similar to that of benzodiazepine withdrawal, has been reported in people who take large quantities of GHB over a prolonged period of time and then suddenly stop taking the drug. Treatment for GHB intoxication is good supportive care. Neither flumazenil nor naloxone have been shown to reverse GHB’s sedative effects.

Ketamine

Synonyms: Super K, Special K, Jet, K, Kit-kat, Super C, Green, Mauve

Ketamine, a dissociative anesthetic originally synthesized in the 1950’s, is structurally similar to PCP. Ketamine directly stimulates nicotinic, muscarinic, and MAO receptors, while inhibiting the reuptake of dopamine, serotonin, and norepinephrine.

The drug’s desired effects include auditory and visual hallucinations, and a floating sensation. However, some of its many undesired side effects include agitation, delirium, combativeness, hypertonus and muscle rigidity, flashbacks, schizophrenic symptoms, chest pain, palpitations, hypertension, apnea, and laryngospasm. Nystagmus is an uncommon occurrence. Deaths from ketamine use alone are rare. Treatment is good supportive care, as most symptoms usually resolve within one to two hours. Benzodiazepines should be used to treat agitation. Rhabdomyolysis may be of concern in patients with myoclonus or muscle rigidity.

Nitrous Oxide

Synonyms: Laughing gas

Nitrous oxide has long been abused because of its ready availability as both an inhaled anesthetic and its use to pressurize whipped cream containers. It is available in pressurized cylinders of various sizes, and in small, pressurized cartridges, called whippets. Its main effects are pulsating auditory and visual hallucinations, disorientation and a floating feeling.

While usually well tolerated, there are many possible adverse events. Frostbite has occurred from depressurization of the gas from the cylinders or whippets directly into peoples’ mouths and noses.

Simple asphyxiation is well documented; this usually, but not always, is associated with bags placed over the victim's head. Exposure to nitric oxide (NO) and nitrogen dioxide (NO₂) may occur because of impurities in the gas. Chronic nitrous oxide use leads to pernicious anemia and sensorimotor neuropathy from oxidation of cobalt in vitamin B12.

Treatment consists of good supportive care and returning the fraction of inspired oxygen (FiO₂) to normal. Patients with the anemia or neuropathy of chronic use should receive supplemental vitamin B12.

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