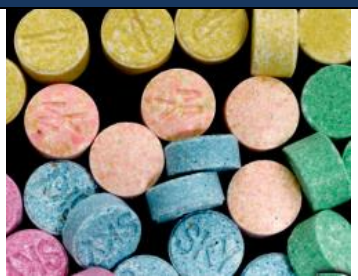
Hallucinogens
Ketamine, LSD, MDMA

Alternative names

- **Ketamine**(K, special K, vitamin K, ket, green, jet, kit-kat, cat valiums, ketalar SV)[2]
- **LSD** (Acid, cubes, purple haze, raggedy Ann, Sunshine, yellow sunshine, LBJ, peace pill, big D, blotters, domes, hits, tabs, doses, window-pane, microdot, boomers)[2]
- **MDMA** (Ecstasy, MDMA, "Adam", XTC, E, EVW, love drug, clarity, lover's speed, hugs, beans)[2]



Characteristics[2,4]

Ketamine

- NMDA receptor antagonist, prevents glutamate activation, inhibits reuptake of catecholamines (5-HT, NE, DA)
- Used as a club drug at 'raves' and involved in "date rapes"
- Doses of 60-100mg are injected; consciousness is maintained at this dose, but disorientation develops
- Effects start within 60 seconds (IV) and 10-20 min (PO)

LSD

- Most potent hallucinogenic drug
- Psychedelic effects are apparent with a dose of 25-50ug
- Effects begin at 40-60 minutes, peak at 2-4 hours, and gradually return to baseline over 6-8 hours.
- 5-HT2 receptor agonist
- Used as a club drug at "raves"
- Effects occur in less than 1 hr and last 2-18hrs
- Tolerance develops rapidly; psychological dependence occurs
- Usually combined with cocaine, mescaline, or amphetamine to prolong effects

MDMA

- Causes a calcium-dependent increase in serotonin release into the synaptic cleft and inhibits serotonin reuptake; increases levels of serotonin, norepinephrine, and dopamine
- Typical dose varies from 50-150mg
- Onset of effects is from 30-60minutes, half-life is about 8 hours
- Commonly used at "raves".

Presentation during intoxication[2]

Common signs and symptoms of intoxication can include[2]

Ketamine

- Nystagmus
- Hostility
- Amnesia
- Impaired motor function
- Increased heart rate and blood pressure
- Confusion
- Vomiting
- Dream-like state
- Depersonalization
- Increased muscle tone
- Numbness
- Nausea
- Mild delirium
- Hallucinations
- Stereotypic movements

Extreme intoxication signs and symptoms may include[2]:

- Severe delirium
- Catatonia
- Respiratory depression
- Loss of consciousness

Presentation during intoxication *(Continued)*	**LSD:** • Mydriasis • Muscle tension • Weakness • Agitation • Dysphoria • Nausea • Hyperthermia • Numbness • Visual hallucinations • Panic • Loss of appetite • Hypertension • Tremors • Irrational behaviour • Psychotic reactions **MDMA** • Wakefulness • Depersonalization • Derealization • Headache • Increased endurance and sexual arousal • Hyperthermia • Creates feelings of euphoria and well-being • Increased energy • Salivation • Nausea • Restless legs • Suppressed appetite • Impaired memory and learning • Urinary retention • Heightened tactile sensations • Mydriasis • Trismus • Blurred vision • Thirst • Seizures • Bruxism • Dry mouth
Monitoring and support during intoxication	**Ketamine** [3] • Presentations are short lived and require symptomatic relief and observation • Low lighting and stimulation should be provided • Levels of patient anxiety should be closely monitored **LSD** • Monitor vital signs[8] • Monitor mental status • Ensure a low stimuli environment • Provide reassurance as symptoms subside **MDMA** • Monitor vital signs (including temperature)[8] • Monitor mental status • Monitor for seizures • Monitor for jaundice[3] • Ensure a low stimuli environment • Provide reassurance as symptoms subside[3] • If hyperthermia occurs, admit to an intensive care unit for intensive support of cardiovascular, respiratory and renal systems [3] ***After effects of MDMA may include;*** [2] • anorexia • drowsiness • muscle aches • generalized fatigue • irritability • anxiety • depression
Withdrawal presentation	**Ketamine** (withdrawal symptoms usually last 4-6 days and include) • Cravings • Poor appetite • Fatigue • Chills

Withdrawal presentation *(Continued)*	• Restlessness • Anxiety • Tachycardia[5] **LSD** • Frequent repeated use of psychedelic drugs is unusual, and thus tolerance is not commonly seen. Tolerance may develop to the behavioural effects of LSD after three or four daily doses, but no withdrawal syndrome has been observed [4] **MDMA** • Withdrawal is marked by a mood "offset" characterized by depression lasting up to several weeks[6] • Increased agitation has also been reported during periods of abstinence in chronic MDMA users[6].
Monitoring and support during withdrawal[8]	**Monitor** • Vital signs • Mental status • Seizure risk • Hydration • Possible serotonin syndrome **Interventions** • Suicide precautions may be necessary • Use calming techniques, reassurance and supportive measures • Benzodiazepines have been used for severe agitation and seizure prevention. • High potency antipsychotics have been used for psychotic symptoms • Antidepressants have been used to treat depression following withdrawal, and to decrease cravings.
Potential Complications	**Ketamine** • Synthetic ketamine has been linked with serious urinary tract infections and bladder-control problems[2] **LSD** • Psychotic reactions can last several days. Flashbacks may occur without drug being taken[2] **MDMA** • Severe physical reactions of MDMA include ischemic stroke, fatal brain hemorrhage, and coma. Excessive physical activity may result in disseminated intravascular coagulation, rhabdomyolysis, acute renal and hepatic failure and multiple organ failure. [2] • MDMA has also been associated with hyperthermia and hyponatremia (water intoxication). Hyperthermia can become life threatening and is usually accompanied by seizures, disseminated intravascular coagulation, rhabdomyolysis, and renal and liver impairment[3] • Hyponatremia is marked by features of confusion, reduced consciousness, and in some cases seizures or convulsions. Symptoms generally resolved as sodium levels are normalized, with full recovery achieved within a few days.[3] • Liver damage can occur shortly after ingestion of ecstasy. Most reported cases resolve spontaneously over weeks to months, but a minority progress to full liver failure requiring transplantation [3]
Notable Drug interactions	**LSD and antidepressants** • Grand mal seizures have been reported with SSRIs[2] • Recurrence or worsening of flashbacks have been reported with SSRIs[2] **MDA/MDMA and antidepressants** • Diminished pharmacological effects of MDMA have been reported [2] • Serotonin syndrome and hypertensive crises have been reported in combination with MAOIs[2]
Psychiatric effects	• In the weeks and months after stopping use, a small percentage of people may experience "flashbacks" in which they briefly relive past episodes of drug use. Psychotic symptoms

	such as hallucinations, and distortions in the sense of time may persist for extended periods.[1] • Chronic regular use of MDMA may result in mood swings, depression, impulsivity, and lack of self-control, memory loss, and parkinsonism.[2] • It is suggested that chronic use of MDMA can produce changes in serotonin function in the CNS and the development of progressive neurodegeneration. [2]

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