



**CAN WE TALK?**

Although pet owners may be reluctant to talk about illicit drugs, veterinary nurses should discuss poison prevention with owners.



**MEET THE AUTHOR**

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# Illicit Drugs: What Veterinary Nurses Need to Know

**A**ccording to the ASPCA Animal Poison Control Center (APCC) AnTox database, marijuana, amphetamines, cocaine, heroin, and hallucinogenic mushrooms are five of the most common illicit drugs companion animals and working police dogs are exposed to.<sup>1</sup>

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Illicit drugs are substances that have been declared illegal to possess, use, or distribute without authorization under federal and/or state laws. This article discusses the importance of the veterinary nurses' role in pet poisoning cases involving illicit drugs and provides a brief overview of clinical signs, decontamination, and management of patients exposed to illicit drugs.

One of the most critical roles veterinary nurses play is knowing how to obtain an accurate history from clients. Obtaining an accurate history can be challenging for several reasons. Clients may be reluctant to share information for fear of being reported to the authorities or having their pet taken away, clients may be intoxicated with the same illicit drug their pet was exposed to, and some clients may not be aware their pet was exposed to an illicit substance. Veterinary nurses should reassure clients the information shared is confidential and the focus is to provide the best possible care for the pet. For more information on how to obtain a pet poison history, please reference [todaysveterinarynurse.com/articles/how-to-take-a-toxin-exposure-history](https://todaysveterinarynurse.com/articles/how-to-take-a-toxin-exposure-history).

Decontamination is similar with all 5 illicit drugs. On average, most of these illicit drugs will produce signs within 15 to 30 minutes, but this can depend on the form of drug and the route of exposure. Unfortunately, this leaves a short time frame for successful decontamination. Another role of a veterinary nurse is knowing the benefits and risks associated with decontamination. Decontamination should be performed only in asymptomatic or stabilized patients. Decontamination can include removing the pet from the source, inducing emesis, administering activated charcoal (AC), and bathing drug residue from the pet's fur. Emesis induction may be unsuccessful in patients that ingest marijuana due to its strong anti-emetic properties.<sup>1,2</sup> AC will bind to all five of these illicit drugs but must be administered with caution. An anti-emetic should be administered prior to giving AC to help prevent the risk of aspiration pneumonia, and sodium levels should be monitored because AC poses a risk for hypernatremia.<sup>1</sup> For more information on how to decontaminate the poisoned patient, and the benefits and risks associated with decontamination, please see: [todaysveterinarynurse.com/articles/oral-decontamination-in-dogs-and-cats/](https://todaysveterinarynurse.com/articles/oral-decontamination-in-dogs-and-cats/) and [todaysveterinarynurse.com/articles/dermal-ocular-and-inhalation-decontamination-in-dogs-and-cats](https://todaysveterinarynurse.com/articles/dermal-ocular-and-inhalation-decontamination-in-dogs-and-cats).



## MARIJUANA

Marijuana is a psychoactive drug and used for recreational and medicinal purposes. Marijuana is the dried leaves and flowers of the *Cannabis sativa* and *C. indica*. It is a Schedule I drug under the Controlled Substances Act and it goes by several names: "pot," "Mary Jane," "weed," "kief," "ganja," "THC," "grass," "reefer," or "honey oil".<sup>3-6</sup> Marijuana is still the number 1 drug of abuse, even though it has been approved for medicinal and recreational use in a little more than half the United States.<sup>3,4</sup> Marijuana contains over 100 identified cannabinoids, but the main cannabinoid responsible for its psychological effects is delta 9-tetrahydrocannabinol, commonly referred to as THC.<sup>2,5,6</sup> THC concentrations vary depending on the form of the plant used. The dried flowers from the female plant may contain 1% to 8% THC, but some of the newer commercial strains can contain up to 20% THC.<sup>2,3</sup> Hashish can contain 10% to 20%; hash oil can contain 20% to 50%, waxes and shatters can contain up to 70%, and dabs can contain over 90% THC.<sup>2,5,7</sup>

Marijuana is generally inhaled (smoking of the dried flowers from the female plant or vaping oils), ingested (eating edibles; drinking teas, tonics, or elixirs), and applied (topical oils, creams, balms, and patches). Ingestion and inhaling secondhand smoke are common causes for animal exposures.

Animals generally develop signs within 30 to 60 minutes after exposure and signs can last up to 72 hours.<sup>2-5</sup> Most dogs present as lethargic, ataxic, and dribbling urine.<sup>1</sup> Other common signs reported include gastrointestinal (GI) signs, such as vomiting, diarrhea, and hypersalivation; central nervous system (CNS)



signs, such as depression, vocalizing, and hyperesthesia; and cardiovascular (CV) signs, such as bradycardia or tachycardia.<sup>1,5,6</sup> Other reported signs include mydriasis and hypothermia.<sup>1,5,6</sup> Tremors, seizures, and coma have been reported but are rare.<sup>1,4,5</sup> Management of marijuana toxicosis is based on symptomatic and supportive care. Veterinary nursing care can include monitoring for CNS signs and vitals (heart rate, blood pressure, body temperature); thermoregulation (IV fluids, warming blankets, and rotating the patient's body position every 4 hours); keeping the pet dry if urinary incontinent; confining to reduce injury; and reducing stimuli (keeping patients in a dark, quiet area of the hospital to reduce further agitation, e.g., hyperesthetic patients). Medications and supplementation can include IV fluids; anti-emetics (e.g., maropitant or ondansetron) to control vomiting; establishing an airway (intubation) and providing oxygen for respiratory depression; atropine for bradycardia; methocarbamol for tremors; and administering diazepam if the patient is hyperesthetic,

#### AMPHETAMINES

Common clinical CNS signs include hyperactivity, restlessness, agitation, anxiety, ataxia, circling, head bobbing, apprehension, and tremors.<sup>11,14</sup> Common CV signs include hypertension (often in conjunction with reflex bradycardia), tachycardia, and tachyarrhythmias.<sup>11</sup> Other clinical signs reported are mydriasis, hyperthermia, serotonin syndrome, and metabolic acidosis.<sup>1,6,11,12,14</sup> Some animals, especially cats, appear hypervigilant and tend to sit and stare.<sup>1</sup> Lethargy, depression, and coma have been reported later during intoxication.<sup>3,11</sup> Seizures, rhabdomyolysis, and disseminated intravascular coagulation are rare.<sup>1,6,11,12</sup>



agitated, or having seizures.<sup>2-7</sup> Marijuana has a wide margin of safety and deaths are rarely reported.<sup>1-3</sup> Prognosis is excellent to good with proper monitoring and treatment.<sup>1,5,6</sup>

Cannabidiol (CBD) is another cannabinoid found in the cannabis sativa plant, but it does not produce the psychoactive effects like THC.<sup>7</sup> CBD can be derived from the marijuana (female) or hemp (male) plants containing less than 0.3% THC on a dry weight basis.<sup>8</sup> If a plant contains more than 0.3% THC, the federal government considers it a marijuana plant. In December 2018, the Agriculture Improvement Act of 2018 was signed, removing hemp from the Controlled Substances Act.<sup>8</sup> This means hemp will no longer be an illegal substance under federal law. Most over-the-counter (OTC) CBD products are made from hemp, and some sources claim CBD can be used to treat seizures, nausea, stress, anxiety, arthritis, back pain, and signs of cancer in pets. A study on the safety and efficacy of cannabidiol in dogs with osteoarthritis was published in July 2018.<sup>9</sup> According to the results, 2 mg/kg of CBD oil helped increase comfort and activity in dogs.<sup>9</sup> No side effects were reported by owners; however, during the CBD treatment, an increase in alkaline phosphatase (ALP) was noted on serum chemistries.<sup>9</sup>

For a drug to be beneficial, a patient must receive an appropriate dosage, and here lies the concern with OTC CBD products. The Food and Drug Administration (FDA) does not regulate the products, and the CBD content may not match up with the label. In 2015, the FDA tested various OTC CBD-containing products, including products marketed for pets.<sup>10</sup> Some of the products tested did not contain the level of CBD claimed on the label, some products contained no CBD whatsoever, and some products contained THC.<sup>10</sup>

There are risks involved when giving pets unregulated OTC CBD products. If the product contains little to no CBD, the pet will not reap the desired benefits. If the product contains more THC than what is allowed, the pet is at risk for developing signs of a THC toxicity. The ASPCA APCC has had reports of pets developing THC signs after ingesting CBD products.<sup>1</sup>

Although these products have not been approved for veterinary use, veterinarians are recommending CBD products to pet owners. Unfortunately, not enough information is known about CBD and its side effects in pets. It is important for veterinary nurses to know the



possible risks and side effects associated with the use of CBD products, share this information with clients, and inform clients what to do if a THC toxicity is suspected.

## AMPHETAMINES

Amphetamines are stimulants and 2 common illicit amphetamines produced in illegal street laboratories are methamphetamine and 3-4 methylenedioxymethamphetamine (MDMA).<sup>6,11,12</sup> Methamphetamine is a Schedule II drug and is also known as “meth,” “speed,” “crystal,” “crank,” and “ice.”<sup>6,13</sup> Meth is generally smoked, snorted, injected, or taken orally and it comes in crystallized chunks or powder.<sup>6,13</sup> MDMA is a club drug commonly referred to as “ecstasy,” “X,” “molly,” “adam,” “roll,” and “e.”<sup>3,6,13</sup> It is a Schedule II drug and generally comes in powder form, capsules, and a variety of colored tablets that are imprinted with a character symbol.<sup>3,14</sup> Ingestion, inhalation, and dermal are the common routes for animal exposures.

Clinical signs can develop within 30 minutes to 2 hours after exposure and can last up to 24 to 72 hours.<sup>6,11</sup> Common clinical CNS signs include hyperactivity, restlessness, agitation, anxiety, ataxia, circling, head bobbing, apprehension, and tremors.<sup>11,14</sup> Common CV signs include hypertension (often in conjunction with reflex bradycardia), tachycardia, and tachyarrhythmias.<sup>11</sup> Other clinical signs reported are mydriasis, hyperthermia, serotonin syndrome, and metabolic acidosis.<sup>1,6,11,12,14</sup> Some animals, especially cats, appear hypervigilant and tend to sit and stare.<sup>1</sup> Lethargy, depression, and coma have been reported later during intoxication.<sup>3,11</sup> Seizures, rhabdomyolysis, and disseminated intravascular coagulation (DIC) are rare.<sup>1,6,11,12</sup> Management of amphetamines toxicosis is based on symptomatic and supportive care. Veterinary nursing care should include monitoring vitals (including an electrocardiography [ECG]), watching for myoglobinuria (renal values and urine color), reducing stimuli, and thermoregulation (e.g., IV fluids, cooling towels, or fans).<sup>1,6,11</sup> Medication and supplementation can include IV fluids to maintain hydration and body temperature, protect the kidneys, and enhance renal excretion of amphetamines; antiemetics; and phenothiazine tranquilizers (e.g., acepromazine or chlorpromazine) for the treatment of agitation and hyperthermia and to regulate blood pressure.<sup>1,11</sup> Acepromazine should be considered first if the pet is tachycardic or hypertensive.<sup>1,11</sup> If the patient

does not respond, a beta blocker (e.g., propranolol or atenolol) is recommended for tachyarrhythmias and esmolol if the pet is hypertensive.<sup>1</sup> Cyproheptadine is a serotonin antagonist and can be used for the treatment of serotonin syndrome signs.<sup>1,14</sup> Methocarbamol can be used for tremors and barbiturates can be used to manage seizures.<sup>11</sup> Gas anesthesia can be used, but benzodiazepines (e.g., diazepam) are not typically recommended due to the risk of paradoxical excitation.<sup>1,11</sup> Ammonium chloride and ascorbic acid have been shown to enhance the elimination of amphetamines and should not be implemented if the acid-base status cannot be monitored, or if the patient has rhabdomyolysis or myoglobinuria.<sup>3,6,11-13</sup> Prognosis for amphetamines is generally good, but it depends on the length and severity of signs.<sup>11</sup> Development of seizures, cardiac failure, and DIC poses the highest risks. Renal failure can result from myoglobinuria and acidosis.<sup>6,12</sup>

## COCAINE

Cocaine is a stimulant alkaloid that is derived from the leaves of the coca plant (*Erythroxylon coca*).<sup>12,15,16</sup> Cocaine is a Schedule II drug and common names include “crack,” “rock,” “bernies,” “ice,” and “flake” for the rock form or “coke,” “snow,” “star dust,” “leaf,” “blow,” and “nose candy” for the powdered form.<sup>6,15,17</sup> Cocaine is often cut with caffeine, lidocaine, amphetamines, benzocaine, diltiazem, and levamisole and generally is snorted, injected, or taken orally.<sup>12,15,17</sup> Ingestion, inhalation, and dermal are the common routes for animal exposures.

Signs can develop in as little as 30 minutes, and although the exact duration of signs is unknown, most pets are hospitalized for approximately 10 to 30 hours.<sup>1,6,15,17</sup> Common signs reported are GI upset, such as vomiting and hypersalivation; CNS signs, such as vocalization altered mentation, hyperactivity, mydriasis, ataxia, tremors, and seizures; and CV signs, such as tachycardia, tachypnea, and hypertension.<sup>6,12,17</sup> Stimulatory signs can be followed by depression in some cases.<sup>3</sup> Other conditions reported are hyperthermia and metabolic acidosis.<sup>6,12,17</sup> Management of cocaine toxicosis is based on symptomatic and supportive care. Veterinary nursing care can include monitoring of the vitals including ECG, thermoregulation, reducing stimuli to avoid further CNS stimulation, and respiratory support by providing a clear airway and ventilation.<sup>3</sup> Management and supplementation can include IV fluids to maintain



renal blood flow; anti-emetics; acepromazine or chlorpromazine to manage hyperactivity and to help reduce hyperthermia; a beta blocker (e.g., propranolol) to correct tachyarrhythmias; methocarbamol for tremors; diazepam or midazolam for the treatment of tremors and seizures; barbiturates for refractory seizures; cyproheptadine for serotonin syndrome signs; and sodium bicarbonate if the patient is acidotic and only if the acid-base status can be monitored.<sup>1,6,16,17</sup> Cocaine has some lipid solubility and lipid emulsion therapy (intralipids) may be helpful.<sup>1,17</sup> The prognosis is good with treatment.<sup>1,17</sup>

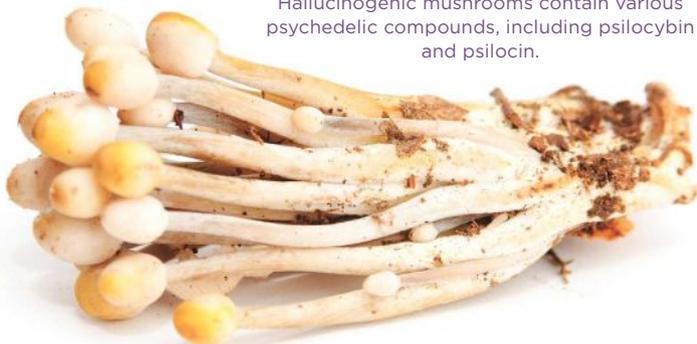
## HEROIN

Heroin (diacetylmorphine) is a semi-synthetic opioid drug synthesized from morphine, a derivative of the opium poppy plant, *Papaver somniferum*.<sup>6,18,19</sup> Opioids act centrally to elevate the pain threshold and to alter the psychological response to pain. Heroin is a Schedule I drug and common street names include “lady,” “white girl,” “black tar,” “smack,” “H,” “horse,” or “brown sugar.”<sup>19</sup> Heroin is generally injected, smoked, snorted, used as a suppository, or ingested and can be cut with other prescription opioids, sugar, starch, strychnine, and levamisole.<sup>6,18,19</sup> Ingestion, inhalation, and dermal are the common routes for animal exposures.

Signs usually develop within minutes and can last up to 12 to 24 hours. Commonly reported signs are GI upset, such as vomiting or constipation; CNS depression, such as altered mentation, sedation, ataxia, seizures and coma; CV signs, such as bradycardia, hypotension, and arrhythmias; and respiratory depression.<sup>1,19</sup> Other signs reported are hypothermia and miosis or mydriasis.<sup>1,19</sup> Agitation vocalization and excitation have also been reported, especially in cats.<sup>6,19</sup>

### FUNGUS AMONG US.

Hallucinogenic mushrooms contain various psychedelic compounds, including psilocybin and psilocin.



Management of heroin toxicosis is based on symptomatic and supportive care. Veterinary nursing care can include monitoring vitals and thermoregulation. Management and supplementation can include IV fluids; anti-emetics; naloxone, the recommended reversal agent that can be used to manage CNS depression, seizures, and respiratory depression; atropine for bradycardia; and lidocaine for arrhythmias.<sup>1,6,19</sup> If seizures cannot be corrected with naloxone, diazepam can be administered.<sup>1</sup> However, exercise caution when using diazepam as it may cause further respiratory depression.<sup>1</sup> If respiratory depression cannot be managed with naloxone, intubation, oxygen or positive pressure ventilation can be implemented.<sup>1,6,19</sup> Prognosis is excellent if naloxone is used to reverse the signs<sup>19</sup> and good if the respiratory and CV systems can be maintained.<sup>1,16</sup> Prognosis is guarded for patients that develop seizures.<sup>1</sup>

## HALLUCINOGENIC MUSHROOMS

Hallucinogenic mushrooms are a genus of mushrooms known as *Psilocybe* and contain hallucinogenic alkaloids called psilocybin and psilocin.<sup>3,20</sup> These hallucinogenic properties stimulate the serotonin receptors in the CNS.<sup>3,6,16,20</sup> The mushrooms grow naturally in the environment on manure, rotting wood, or mulch and common street names include “magic mushrooms,” “caps,” and “shrooms.”<sup>20</sup> Hallucinogenic mushrooms are a Schedule I drug and are commonly ingested plain, in foods (stews or omelets), or in beverages (teas or milkshakes) to disguise the bitter taste.<sup>16,21</sup> Ingestion is the common route for animal exposures.

Signs can develop as soon as 30 minutes to 3 hours and most animals recover within 12 hours.<sup>6,20,21</sup> Common signs include GI upset, such as vomiting and diarrhea; CNS signs, such as mental and behavioral changes, agitation, vocalization, and seizures; and CV signs, such as tachycardia.<sup>1,6,20,21</sup> Hyperthermia, mydriasis, and nystagmus have also been reported.<sup>1,6,20,21</sup>

Management of hallucinogenic mushroom toxicosis is based on symptomatic and supportive care. Veterinary nursing care includes monitoring vitals and monitoring for the development of self-mutilation or other bizarre physical behaviors, thermoregulation, confining pet to prevent injury, and reducing stimuli. Medications and supplementation can include IV fluids, anti-emetics, cyproheptadine for serotonin syndrome signs, and diazepam or barbiturates for the management of seizures.<sup>16,20,22</sup>



Prognosis is good, and most animals recover with proper monitoring and symptomatic care.<sup>6,20</sup>

## DRUG SCREEN

If an illicit drug is suspected, but not known, an OTC urine drug screen can be performed. OTC drug screens may be purchased at most local drug stores and most drug screens will detect 4 of the 5 discussed drugs, excluding hallucinogenic mushrooms. If hallucinogenic mushrooms are suspected, a urine sample can be sent to select veterinary diagnostic laboratories.<sup>20</sup> However, due to the short time frame of clinical signs, most animals will recover before the lab results are confirmed.

For the screening to be as accurate as possible, most patients will need adequate time for the drug to be absorbed, distributed, metabolized, and excreted (ADME) in the urine. False negatives may occur with marijuana because OTC urine drug screens are calibrated to detect certain human metabolites in the urine, and dogs can produce different metabolites that the screen will not detect.<sup>1,6</sup> Some medications can cause false positives (e.g., naproxen, ibuprofen, and proton pump inhibitors can cause false THC positives; antidepressants, such as bupropion and fluoxetine or phenylpropanolamine can cause amphetamine/methamphetamines positives; diphenhydramine, ciprofloxacin, and quetiapine can cause opioid positives).

## CONCLUSION

Another important role of the veterinary nurse is to be aware that “street drugs” are not pure and can be tainted with other illicit substances and can be combined with toxic foods such as chocolate, xylitol, or espresso beans. In these cases, the signs may not always be consistent with certain substances. When in doubt, stabilize the animal and treat the patient’s signs. Prevention is key to pet poisons. Although pet owners may be reluctant to talk about illicit drugs, veterinary nurses should discuss poison prevention with owners, such as avoiding access to illegal substances, keeping the pet away from parties, and muzzling police dogs. **TVN**

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