



Winter Poisoning Risks in Dogs & Cats

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The winter and holiday season are knocking on our door and with the change in season comes an increased risk of exposure to certain toxins for pets. **Essential oils are often more commonly found in households over the holidays while pet owners fill their homes with the smell of pine, fir, and cinnamon. Holiday decorations, including wreaths and other greenery, may include Yew plants instead of fir or pine due to their vibrant color and hardiness.** As normal routines become overtaken by festive activities, even the most cautious pet owner can be distracted, setting up an opportunity for pets to get into things that may be harmful for them. Below, the experts at Pet Poison Helpline take a further look into the concerns of essential oils and Yew plants in your small animal patients.

Essential Oils

Written by: Dr. Jessie Barber, DVM, Associate Veterinarian,
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What are essential oils and where are they found?

Essential oils are volatile lipophilic hydrocarbons distilled from plants, meaning they are oils derived from plants that evaporate at room temperature. They are from the essence of a plant, contributing to fragrance and taste, but are not an essential nutrient to mammals.

Essential oils are commonly found in products for aromatherapy, herbal remedies, insect repellants or insecticides, cosmetics, fragrances, liquid potpourri, household cleaners, detergents, and culinary flavorings.

Exposure risks

Essential oils molecules are lipophilic and small, making them readily absorbed into the skin, lungs, gastrointestinal tract, and many can cross the blood brain barrier into the CNS. The most common pet exposures include owner application, accidental (knocked over diffusers, chewed bottles), and respiratory (diffusers).

For most essential oils, systemic toxicity is a concern when the product is concentrated, whereas diluted products may cause local irritation such as dermatitis and gastroenteritis/oral irritation.

Many essential oils are metabolized in the liver by glucuronidation, making cats a sensitive species to toxicity. Birds are also at an increased risk for inhalation exposures due to their sensitive respiratory tract.

General decontamination

If an animal has been exposed to an essential oil of concern, decontamination can be started at home by the pet owners. Liquid degreasing dish soaps can be used to bathe topical exposures and if there is a corrosive risk, diluting or flushing with water may be recommended prior to evaluation in clinic. Further treatment is dependent on the specific essential oil, concentration, and route of exposure.

Tea Tree Oil

Tea tree oil is a common essential oil found in body care products (hair care, soaps, toothpaste), cleaners, and insect repellants. A typical pet exposure involves the product being applied topically to irritated skin or ears by owners to provide itch relief or wound care.

100% tea tree oil is not recommended for use on pets. As little as a few drops (oral or topical) can result in toxicity to dogs and cats within 30 minutes to 2 hours, with clinical signs lasting days.

Clinical signs may include neurologic and cardiovascular depression, as well as hypothermia and GI upset. Cats may also develop liver injury. Treatment is aimed at decontamination and symptomatic care. Affected animals typically have a good prognosis with appropriate treatment.

Pine Oil

Pine oil is an essential oil found in disinfectants, fragrances, and insecticides. Pine-sol products sold in stores no longer have pine oil; however, older formulations with pine oil can still be purchased over the internet.

Pine oil contains phenols, which have a narrow margin of safety for cats. Clinical signs in cats include GI upset, oral ulcers, pulmonary edema, anemia, liver and organ injury and neurologic abnormalities within minutes to an hour of exposure. Dogs may develop GI upset, neurologic, cardiovascular, and respiratory changes with large exposures. Treatment is supportive and prognosis for symptomatic cats is typically good if only mild clinical signs develop in the first several hours.

Wintergreen Oil

Wintergreen oil is found in toothpaste/oral care, chewing gum, confectionary/mint flavoring, and industrial cleaners (for rust removal). Wintergreen oil contains up to 90-98% of methyl salicylate, which, like aspirin, can lead to GI ulceration +/- liver, renal and CNS signs with large exposures.

Liquid potpourri

Liquid potpourri products typically come in the form of plug-in air fresheners or liquid for diffusers and often have a proprietary blend of unspecified essential oils, cationic detergents, and alcohols. Oral or dermal exposure to these products can result in corrosive injury, fever, lethargy, and tachypnea, especially in cats.



Yew plants

Written by: Heather Handley, DVM, Senior Consulting Veterinarian, Clinical Toxicology

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Yews (Taxus spp.) are evergreen trees or shrubs.

These plants can be found natively or as ornamental plantings in the northern United States, Canada, and Europe. These plants have flat, green leaves that resemble needles and are pointed at the tip. Depending on how it is pruned, they can be used as hedges or grown into

full trees. The male trees produce cones, whereas the females produce singular seeds that are covered with arils - red, fleshy material resembling a berry.

The timber from these trees is strong and durable, which is why it was used to make long bows, tool handles, and wine barrels in historic England. Given its poisonous potential, the plant was also grown in areas where people wanted to prevent cattle from grazing.

The compounds of concern are called Taxine A and Taxine B or yew alkaloids, which is most concentrated in the Japanese Yew (*Taxus cuspidate*). All parts of the plant contain the taxine toxin except for the fruit (or aril). The seed inside the fruit, however, is poisonous. The taxine from the Yew bark has shown medical benefit as it was used to produce Taxol, an anti-neoplastic drug. This drug is now synthetically derived.

Taxine A and B cause an increase in cytoplasmic calcium and sodium ion channel conduction in cardiac myocytes. For a brief review: Sodium channels move Na⁺ ions into the cell, thus initiating an electric signal. Calcium channels move Ca²⁺ into the cell, which amplifies and coordinates the electrical signal from the Na⁺ channels. Together with the brain, these channels drive the heart to beat.

A shift in conduction causes an override of the calcium feedback mechanism and can lead to a decrease in contractility of the heart and depolarization. The taxines are potent calcium and sodium channel blockers. The main effect is blocking sodium and calcium ion currents in and between cardiac cells, thus slowing atrial and ventricular rates.

Cats and dogs often do not ingest enough to cause significant signs. When they do, however, cardiac effects, including heart rate and rhythm abnormalities, and seizures develop. Dogs may be poisoned by playing with or chewing on the sticks from a Japanese Yew. This can be particularly concerning if pets are allowed in the area during shrub trimming or removal. Large animals, particularly horses, may graze on Yew cuttings and die within minutes. Ruminants may not show signs for a few days.

Due to a potentially rapid onset of signs, decontamination options may be limited unless the exposure is readily observed, and treatment is initiated. The focus of care should be monitoring cardiac rhythm and neurologic status. Aggressive care is advised for any patient that ingested more than a few nibbles or if the amount of plant material ingested is unknown. Potential treatments may include hydration support, anti-arrhythmic agents, anticonvulsant medications, along with GI and temperature support.

Prognosis is good if prompt care is provided. Prolonged signs can lead to organ damage and may be fatal.

