



TOXICOLOGY BRIEF

'Tis the Season to Be Informed: Toxic Potential of Holiday Plants

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As the holiday season approaches, mistletoe will be carefully hung above doorways, holly will decorate the fireplace, and guests will arrive with poinsettias in hand. Although many pet owners try to keep these popular holiday plants away from their pets, dogs and cats can be tempted to nip at poinsettias, nibble on holly, and ingest stray mistletoe. Because pets often get into mischief, veterinary technicians should be aware of the potential toxins of holiday plants as well as the resources that are available to assist in their identification. This column provides a brief background on popular holiday plants and discusses their toxic potential as well as how to care for animals that have ingested these plants.

Poinsettia

Poinsettias (*Euphorbia pulcherrima*) belong to the family of plants commonly known as spurges. Joel Roberts Poinsett, who found the flower in Mexico, introduced poinsettias into the United States in the 1820s.^{1,2} Despite popular belief, the toxic potential of this plant has been greatly exaggerated. In the early 20th century, the 2-year-old child of an army officer was rumored to have died from eating a leaf of the plant, thus the legend of the deadly poinsettia originated.^{2,3}

According to one source,⁴ a 50-lb child would have to ingest more than 600 leaves to exceed experimental doses that produced no toxic effects.² The experience of veterinarians

and technicians at the National Animal Poison Control Center (NAPCC) also supports this observation. Callers to the center report that animals that have ingested this plant generally experience only mild to moderate self-limiting gas-

trointestinal (GI) irritation, including hypersalivation, vomiting, and diarrhea.^{2,5,6}

Because of the poinsettia's low potential for toxicity, decontamination of patients that have ingested parts of the plant is usually not necessary; however, a diluent (e.g., water, milk) can be given to reduce possible GI irritation.^{2,6}



Mistletoe

American mistletoe (*Phoradendron serotinum*) is the species of mistletoe most commonly recognized as a symbol of the holiday season. American mistletoe is a parasitic plant that lives off a number of different trees (e.g., walnut, oak) throughout the United States.^{2,6,9}

Whereas poinsettia ingestion produces mild effects in pets, the adverse effects caused by mistletoe ingestion are more severe and can include GI irritation, polyuria, polydipsia, ataxia, bradycardia, hypothermia, dyspnea, seizures, coma, and even death.^{2,6,7,9} As is true for many plants that are ingested, a minimum toxic dose has not been established for mistletoe. According to NAPCC experience, how-

ever, most animal ingestions of the plant usually result in only self-limiting GI upset. As with poinsettias, decontamination measures are generally not necessary. Supportive care may be administered as needed if signs of adverse effects occur.^{2,9}

Holly

American holly (*Ilex opaca*) is a member of the Aquifoliaceae family, which also includes such plants as yerba mate, inkberry, and winterberry.^{2,7,10} Although indigenous to the southeastern United States, this species of holly is also planted as an ornamental evergreen throughout North America.^{2,8}

All parts of the holly plant are considered potentially toxic, composed of methylxanthines (i.e., caffeine and theobromine—both also present in chocolate), detergentlike substances called saponins, and a bitter-tasting toxalbumin known as ilicin.^{2,8,10} As is true of mistletoe and other plants, a minimum toxic dose is difficult to pinpoint. Although holly contains toxic substances, true toxicoses from ingesting the plant are uncommon. GI irritation and mild to moderate central nervous system depression are usually the only effects noted.^{2,10}

In cases in which animals have consumed large quantities of holly, emesis may be induced (in asymptomatic patients only) to reduce the likelihood of GI effects and depression. Most animals do not require GI decontamination. However, water or milk may be given to reduce the potential for GI irritation.²

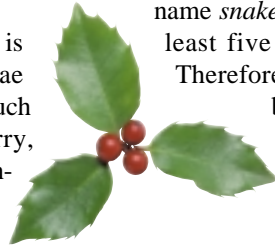
Plant Identification

Because identifying plants can be a challenge, technicians should have some resources at their disposal (see Resources). Local nurseries are an excellent source of knowledge, as are collegiate botany departments or county cooperative extension agencies. Most bookstores carry a vast array

of plant field guides, many of which contain detailed color descriptions of a variety of plants.

When using these sources to identify a plant, it is important to consider that many different plants are referred to by the same or similar common names. For example, the common name *snakeroot* is used to refer to at least five different plant species.

Therefore, a plant should always be identified by its scientific name (i.e., genus and species).



Conclusion

Although some plants can be potentially lethal when ingested, most exposures to poinsettias, holly, and mistletoe generally produce only mild to moderate GI irritation. Proper identification of the plant in question, however, is critical in providing quality medical care to patients.

About the Author

Ms. Farbman is a graduate of the veterinary technician program at Parkland College, Champaign, Illinois. She has been on staff at the National Animal Poison Control Center since January 1998. When not at work, she spends time with her cat Akasha, and her three border collies, Sedona, Mesa, and Phoenix.

References

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2. Farbman D: 10 Common toxicant exposures in animals. Champaign, IL, *Parkland Coll Fall Conf Proc*: 2000.
3. Rose Floral and Greenhouse: *The Poisonous Poinsettia Myth*. Available at: www.rosefloral.com/poins.htm; updated 1997.
4. Silverstein S: Poinsettia. *POISINDEX*®, Englewood, CO, Micromedex, Vol 105, 1995.
5. Poinsettia, in *NAPCC Household Plant*

Reference. Urbana, IL, American Society for the Prevention of Cruelty to Animals—National Animal Poison Control Center, 1998, p 14.

6. Beasley V: Spurges—*Euphorbia* spp., in *A Systems Affected Approach to Veterinary Toxicology*. Urbana, University of Illinois, 1999, pp 703–705.
7. American mistletoe, in *NAPCC Household Plant Reference*. Urbana, IL, American Society for the Prevention of Cruelty to Animals—National Animal Poison Control Center, 1998, Urbana University of Illinois, p 12.
8. Holly, in *NAPCC Household Plant Reference*. Urbana, IL, American Society for the Prevention of Cruelty to Animals—National Animal Poison Control Center, 1998, p 9.
9. Beasley V: *Phoradendron* spp. and Viscum—Mistletoe, in *A Systems Affected Approach to Veterinary Toxicology*. Urbana, University of Illinois, 1999, pp 683–684.
10. Beasley V: *Ilex* spp.—Holly, in *A Systems Affected Approach to Veterinary Toxicology*. Urbana, University of Illinois, 1999, p 716.

Resources

For more information about these plants and other potentially toxic substances, please contact the American Society for the Prevention of Cruelty to Animals—National Animal Poison Control Center (NAPCC) hotline 24 hours a day at 888-4ANI-HELP or 900-680-0000. Veterinary technicians and pet owners can obtain two plant reference guides from the NAPCC:

Household Plant Reference. Urbana, IL, American Society for the Prevention of Cruelty to Animals—National Animal Poison Control Center, 1998. (\$15)

Hall JO, Buck WB, Côté LM: *Natural Poisons in Horses*. Urbana, IL, American Society for the Prevention of Cruelty to Animals—National Animal Poison Control Center, 1995. (\$22)