

POTENTIALLY TOXIC GARDEN PLANTS

Malinda E. Wallis, BS, CVT
ASPCA Animal Poison Control Center
Urbana, Illinois

Although ripened tomatoes usually are not problematic to cats, green tomatoes can cause clinical signs.



Spring is here and the air is heating up. As your clients head for their gardens, tools in hand, are you prepared for the calls that you may receive regarding ingestion of certain garden plants by pets? There are numerous facts and myths surrounding which plants can actually be harmful to small animals. Just remember when dealing with toxicology, any plant can be problematic if the animal ingests an inappropriate amount.

POTENTIALLY HAZARDOUS PLANTS Tomatoes

Tomatoes (*Solanum lycopersicum*) belong to the nightshade family.¹ Ingestion of the greenery, flowers, and green fruit can cause clinical problems in dogs and cats. Tomatine, an alkaloid related to solanine, is the agent that is concentrated in the young fruit and plant. As the plant ripens, the tomatine is metabolized. Therefore, ripe tomatoes are less likely to be problematic for animals. Clinical signs include gastrointestinal (GI) upset, cardiac effects, and central nervous system signs (e.g., ataxia, muscle weakness, tremors, seizures), resulting from cholinesterase inhibition. Because tomatine is very poorly absorbed orally, systemic effects are rare. As with all intoxications, the severity of

clinical signs depends on the amount ingested. Treatment usually consists of symptomatic and supportive care.²

Grapes

Grapes (*Vitis* spp) are commonly grown in backyards where dogs are frequently exercised. Recently, the ASPCA Animal Poison Control Center has identified cases of acute renal failure associated with ingestion of grapes and raisins by dogs.³ It is unknown by what mechanism renal failure develops. The syndrome may affect only a certain population of dogs, but no relationship has been found between

³For more information about grape toxicosis, see "Toxicology Brief: Grape and Raisin Toxicity in Dogs," which appeared on page 135 of the February 2005 issue of *Veterinary Technician*.

breed, age, or sex. It is unknown if similar signs occur in cats. With acute exposure, renal damage may occur within 24 hours, causing azotemia. Other clinical signs in dogs are vomiting, diarrhea, anorexia, and oliguria. The treatment for grape toxicosis is fluid diuresis to protect the kidneys and maintain adequate urine output. Renal values should be monitored closely. Prevention is the key. Let your clients know that this fruit can cause life-threatening clinical problems and that grapes should not be fed as treats.²

Avocado

The avocado (*Persea americana*) is a common food that seems perfectly harmless. However, avocados have been shown to cause mammary necrosis in goats within a few hours of exposure.² Avocados are also believed to cause myocardial degeneration in cattle, mice, rabbits, fish, and birds. Birds that ingest even the smallest amount should be decontaminated promptly to reduce the possibility of fatal signs. The effects on dogs and cats are not completely understood. GI signs are commonly seen and should be treated symptomatically. In addition, the animal

Setting up a Plant Toxicology Reference in the Clinic

There are several ways technicians can prepare themselves to handle calls from concerned owners regarding a pet's recent exposure to a common garden plant. Implementing the following steps can help the veterinary staff better handle common ingestions:

- **Educate the staff about common toxic and nontoxic plants.** The Internet is a great tool for this. The ASPCA Animal Poison Control Center's Web site (www.aspc.org/apcc) provides lists of toxic and nontoxic plants. These lists can be made readily available to staff members who may be taking the calls.
- **Develop a protocol system on how different types of calls should be handled.** Work with the veterinarians in the clinic to decide which cases should be handled by the receptionist, veterinary technicians, and veterinarians and which cases should be referred to the ASPCA Animal Poison Control Center. This will save valuable time for the pet and frustration for the owner.
- **Periodically hold staff meetings to review toxicology subjects.** This will help to keep everyone refreshed on their toxicology knowledge.

should be monitored closely for other clinical signs related to the cardiovascular system.^{1,2}

Rhubarb

Rhubarb (*Rheum rhabarbarum*) is another common plant that your clients may have in their gardens. This plant contains oxalic acid, which can cause damage to the GI tract and the kidneys in dogs and cats. The leaves of the plant can cause vomiting, diarrhea, and oral irritation. Oxalic acid can lead to the formation of calcium oxalate crystals, which cause renal tubular damage resulting in renal failure. The treatment for this type of ingestion is symptomatic and supportive care for the GI tract and fluid diuresis to help protect the kidneys.²

Onion and Garlic

Onion (*Allium cepa*) and garlic (*Allium sativum*) are in the same family and can affect animals the same way. All types of onions and garlic can cause clinical problems. *Allium* spp can cause Heinz body formation, methemoglobinemia, agglutination, and hemoglobinuria. Cats are more sensitive to *Allium* toxicosis than dogs. In addition to anemia, small animals may exhibit GI signs, including anorexia, vomiting, and diarrhea. The anorexia often occurs 1 day before the hemolysis. GI signs should be managed, and the patient's hematocrit level should be monitored closely. A blood smear should be conducted to determine the presence of Heinz bodies.¹⁻³

COMMON NONTOXIC FOOD PLANTS

Many garden foods are not expected to cause life-threatening signs. Keep in mind that any time an animal ingests anything that it is not accustomed to eating, mild to moderate GI signs may result. Different types of squash, such as acorn, buttercup, and butterfly, fit into this category. Zucchini, cucumbers, melons, and bananas are also nontoxic to pets.

When outside, pets also have access to seeds that have fallen to the ground. Apple and cherry seeds are often thought to be poisonous. Although they do contain cyanide, the amount is very small. In addition, the seeds usually are not broken open when ingested. There is a higher probability that the seeds will cause a foreign body obstruction than toxicosis from cyanide.⁴

REFERENCES

1. Burrows GE, Tyrl RJ: *Toxic Plants of North America*. Ames, Iowa State University Press, 2001.
2. ASPCA Animal Poison Control Center Case Database: Unpublished data, Urbana, IL, 1998-2004.
3. Simmons DM: Onion breath. *Vet Tech* 22(8):424-426, 2001.
4. ASPCA Animal Poison Control Center: *List of Non Toxic Plants*. Available at: www.aspc.org/site/PageServer?pagename=apcc_nontoxicplants; accessed April 2005. VI

Drontal® Plus

(praziquantel/pyrantel pamoate/febantel)
Tablets

Broad Spectrum Anthelmintic for Dogs

Each Drontal® Plus Tablet for Puppies and Small dogs* contains 22.7 mg praziquantel, 22.7 mg pyrantel base as pyrantel pamoate and 113.4 mg febantel.

Each Drontal® Plus Tablet for Medium sized dogs contains 68.0 mg praziquantel, 68.0 mg pyrantel base as pyrantel pamoate and 340.2 mg febantel.

Each Drontal® Plus Tablet for Large dogs contains 136.0 mg praziquantel, 136.0 mg pyrantel base as pyrantel pamoate, and 680.4 mg febantel.

INDICATIONS: Drontal® Plus (praziquantel/pyrantel pamoate/febantel) Broad Spectrum Anthelmintic Tablets are indicated for removal of Tapeworms (*Dipylidium caninum*, *Taenia pisiformis*, *Echinococcus granulosus*, and removal and control of *Echinococcus multilocularis*). For removal of Hookworms (*Ancylostoma caninum*, *Uncinaria stenocephala*), Ascarids (*Toxocara canis*, *Toxascaris leonina*), and Whipworms (*Trichuris vulpis*) in dogs.

***NOT FOR USE IN DOGS WEIGHING LESS THAN 2 LBS. OR PUPPIES LESS THAN 3 WEEKS OF AGE.**

PRECAUTIONS: Strict hygienic precautions should be taken when handling dogs or feces suspected of harboring *E. multilocularis*. Infected dogs treated for the first time with Drontal® Plus Tablets and dogs treated at intervals greater than 28 days may shed eggs in the feces after treatment. The animal should be held in the clinic during this interval and all feces should be incinerated or autoclaved. If these procedures are not possible, the eggs can be destroyed by soaking the feces in a sodium hypochlorite (bleach) solution of 3.75% or greater.¹ All areas where the animal was maintained or in contact with should be thoroughly cleaned with sodium hypochlorite and allowed to dry completely before reuse.

CONTRAINDICATIONS: DO NOT USE IN PREGNANT ANIMALS. Dogs treated with elevated levels (6 consecutive days with 3 times the labeled dosage rate) of the combination of febantel and praziquantel in early pregnancy demonstrated an increased incidence of abortion and fetal abnormalities.² The effects of Drontal® Plus on pregnant animals have not been determined.

There are no known contraindications against the use of praziquantel or pyrantel pamoate in dogs.

ANIMAL TOXICOLOGY: Controlled safety evaluations have been conducted in dogs with Drontal® Plus (praziquantel/pyrantel pamoate/febantel) Broad Spectrum Anthelmintic Tablets. Dogs receiving up to 5 times the label dosage (35 mg praziquantel, 35 mg pyrantel pamoate and 179 mg febantel per kg of body weight) for 3 consecutive days (3 times the label duration) showed clinical signs of vomiting and non-formed stools. One dog receiving a 3 times labeled dose had elevated SGPT, SGOT, CPK and GGT readings (outside of normal range) at 6 days post-treatment. No additional findings were noted in hematology/clinical chemistry parameters nor were there any treatment related histological lesions. Vomiting was the only side effect observed when dogs received a single treatment of 61 mg praziquantel, 61 mg pyrantel pamoate and 305 mg febantel/kg with one dog having an elevated SGPT reading (outside of normal range) at 24 hours post-treatment which had returned to normal by 7 days.

WARNING: KEEP OUT OF REACH OF CHILDREN.

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

REFERENCES:

¹ Craig, P.S. and McPherson, C.N.L., 1988. Sodium Hypochlorite as an ovicide for *Echinococcus*. *Ann Trop Med and Parasit*. 82(2):211-213.

² Freedom of Information Summary (FOI) NADA 133-953 Vercom Paste (febantel and praziquantel).

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