

SAVING PETS' LIVES, 24 HOURS A DAY, 7 DAYS A WEEK

PET POISON **HELPLINE**



From Indoors to Out: Plants Poisonous to Small Animals

April 1, 2014

Ahna Brutlag, DVM, MS, DABT, DABVT

Associate Director of Veterinary Services

Pet Poison Helpline

abrutlag@petpoisonhelpline.com

&

Adjunct Assistant Professor

Dept. Veterinary Biomedical Sciences

College of Vet. Med., University of Minnesota



Introduction



Ahna G. Brutlag, DVM,
MS, DABT, DABVT

Associate Director

Pet Poison Helpline
Minneapolis, Minnesota

CENSORED



Did you know?

- Incidence rate of poisonous plant ingestion in small animals
- VPI Pet Insurance receives

2012	2013
\$389,320.74 in submitted fees	\$538,336.37 in submitted fees
Average fee per pet = \$507.85	Average fee per pet = \$565.48



VPI® and Pet Poison Helpline® working together

- Shared mission in highlighting the importance of preparing for accidents and poisonings in small animals
- Addressing the cost of veterinary care
 - VPI covers the \$39 Pet Poison Helpline fee when a pet is brought in to your hospital for care
- Enabling best medicine
 - Pet owners with VPI Pet Insurance spend twice as much on their pets (single events) than those without VPI Pet Insurance



VPI® and Pet Poison Helpline® working together

➤ Providing veterinary reviewed pet health information online

- www.petpoisonhelpline.com/owners
- www.petinsurance.com/healthzone.aspx

➤ Providing complimentary pet owner educational materials for your practice – available for ordering

- First Aid for Your Pet brochure
- Poisoning Emergencies brochure
- Toxins in the Kitchen stickers
- Toxic Human Meds stickers
- Emergency Numbers stickers

IN CASE OF EMERGENCY

Saving pets' lives... 24 hours a day, 7 days a week

PET POISON HELPLINE
800.213.6680

* Not a VET. For information only. VPI is not affiliated with VPI.

www.petpoisonhelpline.com

866-VET-PETS • VetPetHealth.com
The #1 Veterinarian Recommended Pet Health Insurance

TOP 10 TOXINS in the kitchen

1. Chocolate
2. Grapes, raisins, & currants
3. Xylitol/sugar-free gum/sweet
4. Fatty table scraps
5. Onions & garlic
6. Compost
7. Human medications
8. Macadamia nuts
9. Household cleaners
10. Unbaked bread dough/alcohol

Saving pets' lives... 24 hours a day, 7 days a week

PET POISON HELPLINE
800.213.6680

* Not a VET. For information only. VPI is not affiliated with VPI.

www.petpoisonhelpline.com

866-VET-PETS • petinsurance.com
The #1 Veterinarian Recommended Pet Health Insurance

Pet Education Series

America's #1 Veterinary Recommended Pet Health Insurance Provider

First Aid for Your Pet

VPI Pet Insurance
866-Vet-Pets
petinsurance.com

In partnership with

PET POISON HELPLINE
800.213.6680
www.petpoisonhelpline.com

Pet Education Series

America's #1 Veterinary Recommended Pet Health Insurance Provider

Preventing Pet Poisoning Emergencies

VPI Pet Insurance
866-Vet-Pets
VetPetHealth.com

VPI PET INSURANCE
a Nationwide Insurance® company

1-855-228-5201

GET A QUOTE

Toxic Food Guide for Pets

What Not to Feed Dogs and Cats

Dogs and cats are curious by nature, particularly when it comes to food. They're also very good at begging for a taste of whatever we may be eating or cooking. As cute as they may be, though, our pets can't always stomach the same foods as us — some food can be toxic and even deadly to their health.

Use this toxic food list as a guide to preventing accidental toxic exposure to your four-legged companion.

Alcohol

Alcohol is rapidly absorbed into the bloodstream and affects pets quickly. Ingestion of alcohol can cause dangerous drops in blood sugar, blood pressure and body temperature. Intoxicated animals can experience seizures and respiratory failure. Desserts containing alcohol or yeast-containing dough are often the unknown culprits.

Caffeine

Coffee, tea, energy drinks, dietary pills or anything containing caffeine should never be given to your pet, as they can affect the heart, stomach, intestines and nervous system. Symptoms include restlessness, hyperactivity, muscle twitching, increased urination, excessive panting, increased heart rate and blood pressure levels and seizures.

Chocolate

Different types of chocolate contain various levels of fat, caffeine and the substances methylxanthines. In general, the darker and richer the chocolate (i.e., baker's chocolate), the higher the risk of toxicity. Depending on the type and amount of chocolate ingested, dogs may experience vomiting, diarrhea, urination, hyperactivity, heart arrhythmias, tremors and seizures. Learn about [chocolate toxicity](#).

Fatty Foods

Foods that are high in fat can cause vomiting and diarrhea. Pancreatitis often follows the ingestion of fatty meal in dogs. Certain breeds like miniature schnauzers, Shetland sheepdogs, and Yorkshire terriers appear to be more susceptible to a bout of pancreatitis than other breeds. Fight the temptation to share fast food leftovers, junk food or foods cooked in grease with your dog.

Fat Trimmings and Bones

Table scraps often contain meat fat that a human didn't eat and bones. Both are dangerous for dogs. Fat trimmed from meat, both cooked and uncooked, may cause pancreatitis in dogs. And, although it seems natural to give a dog a bone, a dog can choke on it. Bones can also splinter and cause an obstruction or lacerations of your dog's digestive system. Watch this vet video about [paws and bones](#).

Fruit Toxins

The specific problem with persimmons, peaches, and plums are the seeds or pits. The seeds from persimmons can cause inflammation of the small intestine in dogs. They can also cause intestinal obstruction, a good possibility if a dog eats the pit from a peach or plum. Plus, peach and plum pits contain cyanide, which is poisonous to both humans and dogs should the pit be broken open and consumed.

Download & Print

Top Human Meds Toxic to Pets

1. Pain relievers (e.g. Advil®, Aleve®, Motrin®, Tylenol®)
2. Antidepressants (e.g. Zoloft®, Cymbalta®, Effexor®)
3. ADD/ADHD medications (e.g. Ritalin®, Vyvanse®)
4. Sleep aids (e.g. Xanax®, Ambien®, Lunesta®)
5. Muscle relaxants (e.g. Lioresal®, Flexeril®)
6. Heart medications (e.g. Carbid®/Cardivan®)

Saving pets' lives... 24 hours a day, 7 days a week

PET POISON HELPLINE
800.213.6680

* Not a VET. For information only. VPI is not affiliated with VPI.

www.petpoisonhelpline.com

866-VET-PETS (866-838-7387)
petinsurance.com

The #1 Veterinarian Recommended Pet Health Insurance

PET POISON HELPLINE®

800.213.6680

www.petpoisonhelpline.com

Pet Poison Helpline

- Animal poison control
 - 24/7 availability
 - **\$39** one-time fee/case
 - Unlimited case follow-up
 - Access to multiple specialists (DVM and others)
 - Board-certified veterinary toxicologists (DABVT, DABT, Board-eligible ABVT & ABT)
 - Emergency/Critical Care (2 DACVECCs, ECC resident)
 - Internal Medicine (DACVIM)
 - Herpetology
 - PharmDs/clinical pharmacologists

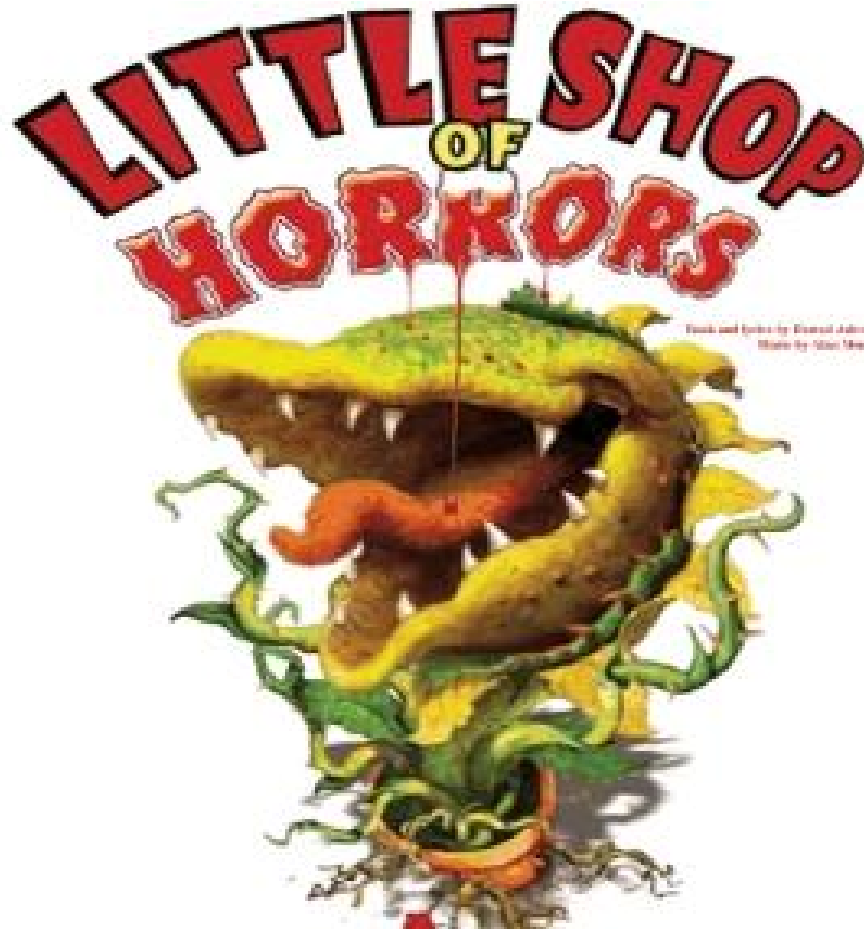


Lecture Objectives

- Review the most common plants involved in small animal poisonings
 - Identification
 - Mechanism of action
 - Decontamination
 - Treatment
 - Prognosis



Most plants aren't this bad...





LILIES

Lily basics

- True lilies
 - *Lilium* and *Emerocallis* species
 - Easter lily, Tiger lily, Stargazer lily, all Asiatic lilies; Day lily
 - Common sound-alikes
- Cats only
- Toxic dose
 - 1-2 leaves or petals
- Toxic portion
 - All of the plant, even pollen!
 - Water from vase



Day Lily (*Hemerocallis* spp.)

Lilium sp. Examples (true lilies)



Easter Lily
Lilium longiflorum



Tiger Lily
Lilium tigrinum



Asiatic Lily

Very common in cut-flower bouquets (*Lilium* spp.)



Not all “lilies” are “true lilies”!

- These plants are NOT true lilies (*Lilium* sp.)
- Do NOT cause renal failure in cats but do have other toxic principles



Calla Lily
(*Zantedeschia* spp.)



Peace Lily
(*Spathiphyllum* genus)



Lily of the Valley
(*Convallaria majalis*)

Peruvian lily (*Alstroemeria* spp.)



Non-toxic!

Lily Toxicosis

- Clinical Signs

- 0-3 hours post-ingestion
 - Vomiting, anorexia, depression
- 12-24 hours post-ingestion
 - Beginning of renal failure
 - Crystals do NOT form
- 1-5 days post-ingestion
 - Dehydration develops
 - Stop producing urine
 - Death due to acute renal failure



- Prognosis

- Good if early and treated aggressively
- Grave if no treatment
- Poor if IVF not started within 18 hr or anuria has developed

Treatment

- Aggressive decontamination
 - Emesis induction
 - Xylazine 0.4-0.6 mg/kg IM once
 - Activated charcoal + cathartic x1
- Fluids, fluids, fluids X 48-72 hours
- Gastrointestinal support:
 - Antiemetic
 - H₂ blocker
 - Phosphate binders
 - Nutritional support



Treatment

- Appropriate monitoring
 - Blood pressure
 - Urine output
 - Normal: 1-2 ml/kg/hour
 - Measuring ins and outs
- Monitoring baseline blood work
 - Recheck PCV/TS, renal panel q 24 X 2-3 days; repeat in 3-5 days
- Peritoneal or hemodialysis



**Outcome following gastrointestinal tract decontamination and intravenous fluid diuresis in cats with known lily ingestion:
25 cases (2001–2010)**

AJ Bennett, BVSc, and EL Reineke, VMD, DACVECC
JAVMA, Vol 242, No. 8, Apr 15, 2013



INSOLUBLE OXALATES



Insoluble oxalates

- Insoluble vs. soluble
- *Araceae* family
- 200 species
- Common house plants:
 - Little water
 - Little light
 - Non-green thumb



Insoluble oxalates

- Very common house plants
 - Philodendron (*Philodendron* spp.)
 - Calla lily (*Zantedeschia* spp.)
 - Peace lily (*Spathiphyllum* spp.)
 - Umbrella plant (*Schefflera* spp.)





Insoluble oxalates

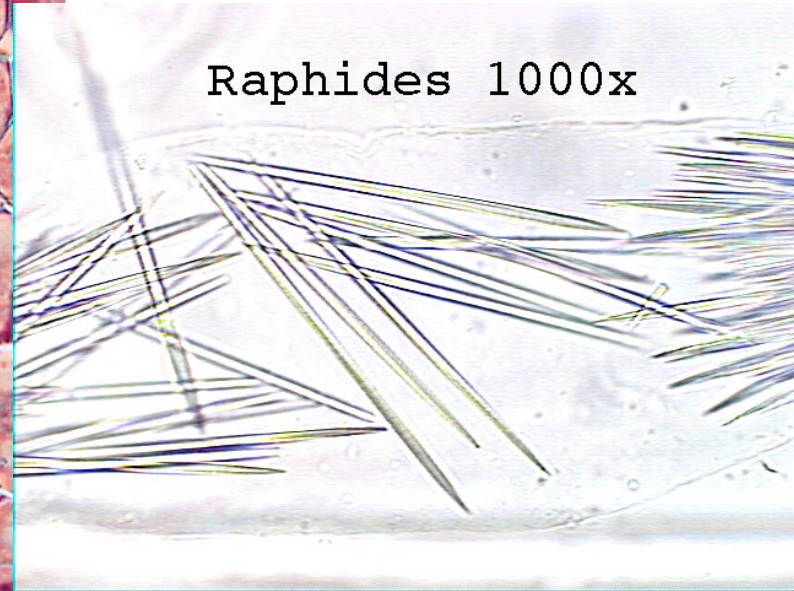
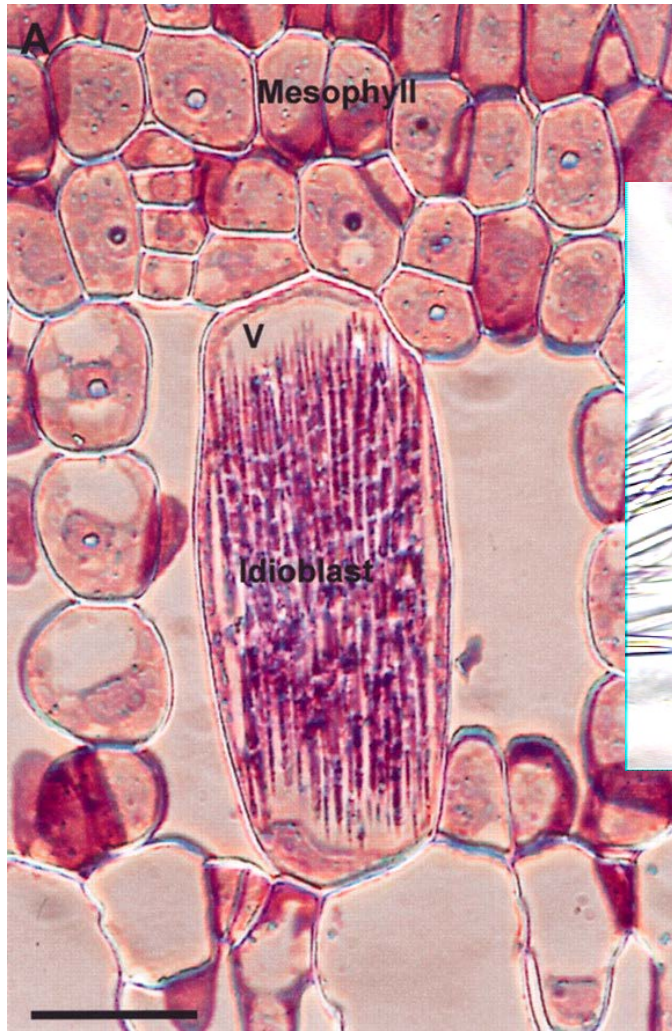
- Arrowhead vine
- Dumbcane, Mother-in-law's tongue
- Sweetheart vine
- Pothos, hunter's robe, devil's ivy
- Elephant's ear



Raphide (Ca oxalate) structure

The Ca oxalate crystals (raphides) appear as a bundle of needles within an idioblast cell.

Crystals are released when leaves are chewed.



<http://www.life.illinois.edu/ib/335/Monocots/Monocots.html>

Li X et al. Plant Physiol. 2003;133:549-559





Clinical signs

- Look terrible!
- Hypersalivation
- Pawing at mouth
- Oropharyngeal edema
- Ocular irritation
- Dermal irritation





Treatment

- R/O soluble!
- Generally treated at home
- For once, milk is OK!
- Flush mouth





Treatment

- If in the clinic:
 - Flush mouth
 - Anti-emetic
 - Fluid therapy (SQ)
- Monitor:
 - Rare: upper airway obstruction

Case Report

Journal of Veterinary Emergency and Critical Care 19(6) 2009, pp 635–639
doi: 10.1111/j.1476-4431.2009.00486.x

Airway obstruction in a dog after *Dieffenbachia* ingestion

Katherine Peterson, DVM; Jessica Beymer, DVM; Elke Rudloff, DVM, DACVECC and
Mauria O'Brien, DVM, DACVECC

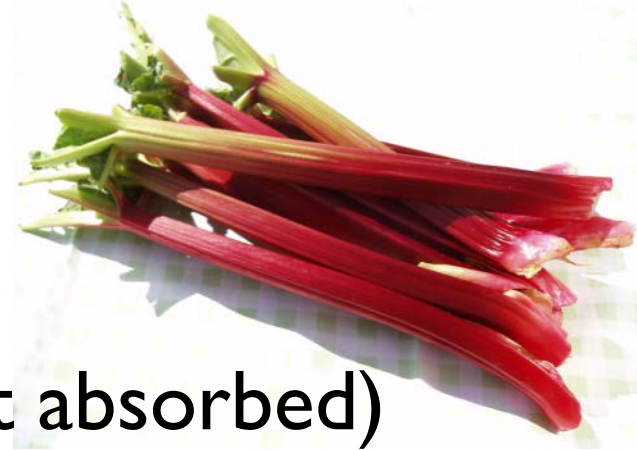


SOLUBLE OXALATES



Soluble oxalate-containing plants

- Oxalic acid and oxalate salts
- Very different from insoluble (not absorbed)



- Examples:
 - Rhubarb
 - Starfruit
 - Shamrock





Soluble oxalate-containing plants

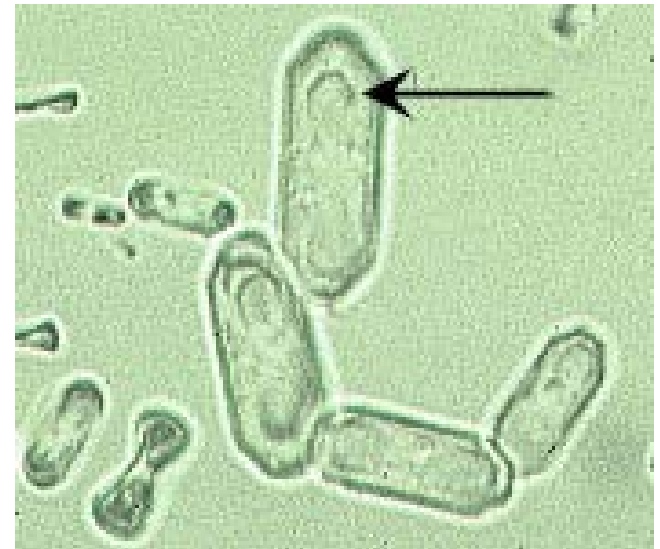
- More of a large animal problem
- Acute renal failure (ARF) with large ingestions
- Chronic renal insufficiency patients?





MOA

- Absorbed from GIT → bind with systemic calcium → acute hypocalcemia
- Calcium oxalate crystals accumulate → nephrosis → ARF





Soluble oxalates: clinical signs

- Hypersalivation
- Anorexia
- Vomiting
- Diarrhea
- Lethargy
- Weakness
- Hypocalcemia:
 - Tetany/tremors
- 24-36 hours post-ingestion:
 - PU/PD
 - Oliguria
 - Oxaluria
 - Hematuria





Soluble oxalates: treatment

- Decontamination
 - Emesis induction
 - Activated charcoal + cathartic XI
- Clinicopathologic monitoring
 - Hypocalcemia
 - Oxaluria
 - Azotemia
- Fluid therapy
- Anti-emetics
- Symptomatic supportive care





CARDIAC GLYCOSIDES

Cardiac Glycosides

- Prototype: Digoxin from the foxglove plant (*Digitalis* spp.)
- Group includes:
 - Lily of the Valley (*Convallaria majalis*)
 - Foxglove (*Digitalis purpurea*)
 - Woolly foxglove (*Digitalis lantana*)
 - Kalanchoe (*Kalanchoe* spp.)
 - Oleander (*Nerium oleander*)
 - Yellow oleander (*Thevetia peruviana*)
 - Desert rose (*Adenium obesum*)
 - Dogbane (*Apocynum* spp.)
 - Giant milkweed (*Calatropis* spp.) – large animal
 - Milkweed (*Asclepias* spp.) – large animal
 - Star of Bethlehem (*Ornithogalum umbellatum*)



Foxglove
(*Digitalis purpurea*)

Lilly of the Valley (*Convallaria majalis*)



Suggested read: Atkinson, KJ et al. *Suspected lily-of-the-valley (Convallaria majalis) toxicosis in a dog.* JVECC 2008; 18(4)

Foxglove (*Digitalis purpurea*)



Kalanchoe (*Kalanchoe* spp.)



Suggested read: Smith G.. **Kalanchoe species poisoning in pets** Vet Med 2004; 99(11)

Cardiac Glycosides

- Range of toxicity
 - *Nerium oleander*—2-3 leaves
 - Common in CA
 - 1.5 gram dried foxglove (child)
 - Dogs with ABCBI more sensitive to CNS effects
 - Cats may be more sensitive than dogs

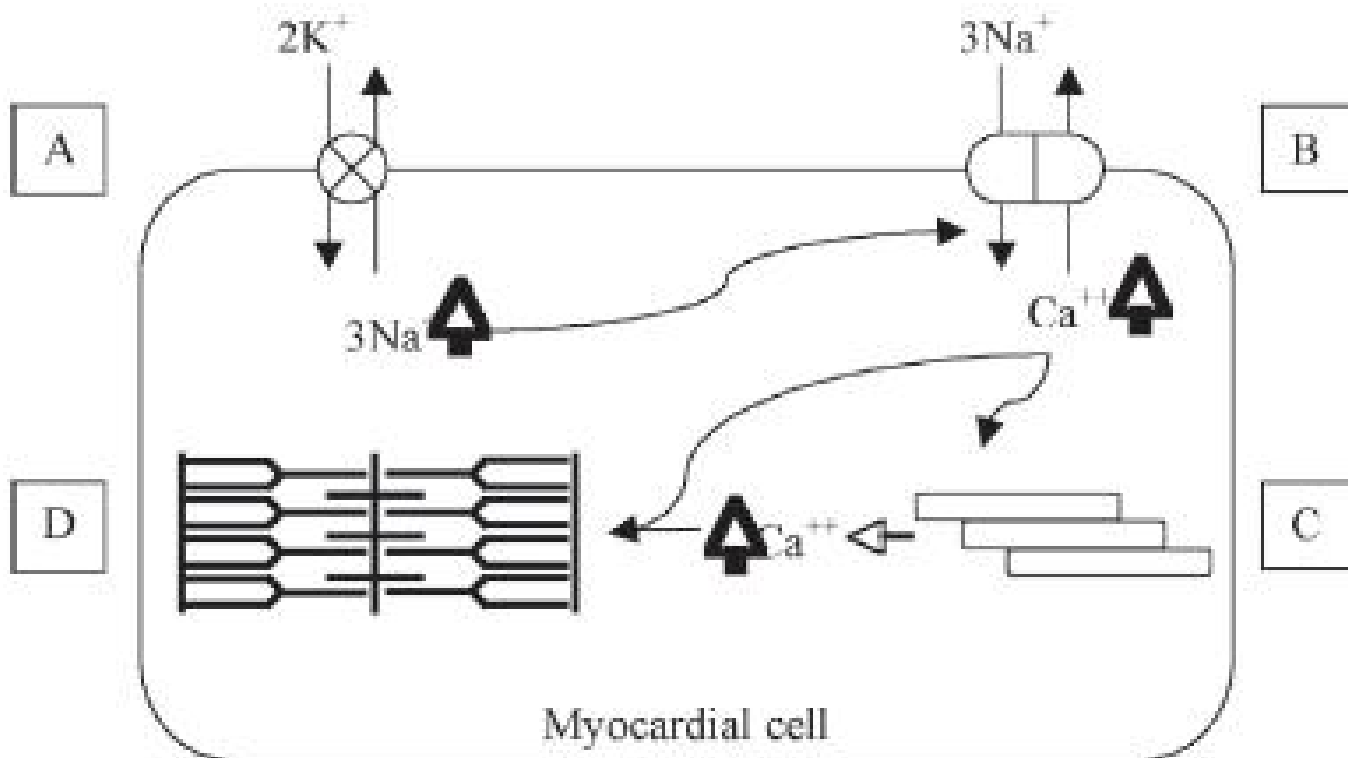


Nerium oleander

Suggested read: Cargill & Martinson. Cardiac glycosides. In: Osweiler GD, Hovda LR, Brutlag AG, Lee JA, eds. *Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Toxicology*. Ames, IA: Wiley-Blackwell, 2011



Figure 2. Mechanism Of Cardiac Glycosides.



A. Cardiac glycosides inhibit the $\text{Na}^+\text{-K}^+\text{-ATPase}$, causing a rise in intracellular Na^+ .

B. Ca^{++} is prevented from exiting cell via antiporter.

C. Elevated intracellular Ca^{++} causes release of Ca^{++} from the sarcoplasmic reticulum.

D. And enhances cardiac inotropy.

Cardiac Glycosides

- Clinical Signs
 - Vomiting (+/- blood), diarrhea (+/- blood), abdominal pain, hypersalivation
 - Depression, weakness, mydriasis
 - **Bradycardia** (most common), tachycardia, weak/irregular pulses, AV block, arrhythmias, asystole
 - CNS signs (*Kalanchoe*)
- Time Frame
 - Depends on amount ingested
 - GI signs as early as 30-45 minutes
 - May persist 4-5 days



Cardiac Glycosides: Treatment

- Early emesis and multiple doses of activated charcoal
- Continuous ECG monitoring (24 hrs)
- Blood pressure monitoring
- Monitor electrolytes:
 - Hyperkalemia :Treat aggressively if it occurs
 - IV sodium bicarbonate or glucose/insulin
 - Rarely, hypokalemia



Foxglove

Cardiac Glycosides: Treatment

- Arrhythmias
 - Atropine , beta-blockers, lidocaine
 - Temporary pacemakers
- **ANTIDOTE: Digibind[®]** (FAB portions of digoxin specific antibodies)
 - Used in humans
 - 1-2 vials needed in pets
 - \$600/vial
- Supportive care
 - Oxygen therapy
 - IV fluids as needed
 - Correct acid base abnormalities and other electrolyte changes

Oleander poisoning 23 horses, SanDiego, CA in 2009

Dozens of horses poisoned at California farm

updated 8:00 a.m. EDT, Sat August 1, 2009

STORY HIGHLIGHTS

- At least 20 horses were deliberately poisoned on farm, authorities say
- Toxic oleander leaves were found with apples, carrots in horses' stalls
- No word yet on possible motive or sickened horses' prognosis

[Next Article in Crime »](#)

By Monica Trevino
CNN

TEXT SIZE  

(CNN) -- More than 20 horses became ill when they were intentionally poisoned with toxic leaves in southern California this week, authorities said Friday.



These oleander bush leaves, toxic to horses, were found in a San Diego, California, stable. KFMB

The horses were given oleander bush leaves between Wednesday night and early Thursday morning at their ranch in San Diego, the county sheriff's department said in a news release.

The leaves were found in the stalls in the morning by employees arriving to work, according to officials.

"We found bits and pieces of carrots and chopped up apples along with multiple leaves," ranch owner Bill Tomin told CNN television affiliate KFMB.

"This is horrible, it's scary why would someone do such a thing," he said. "If they were angry with me, burn my house down, slash my tires, confront me."



THE
**PRESIDENTIAL
INAUGURATION** ★

Oleander in the news Australia, 2011



Supposed to contain 12 Candle Nut seeds. (*Aleurites moluccana*)
Instead, contained Yellow Oleander seeds! (*Thevetia peruviana*)



YEW (*TAXUS* SPP.)

Yew (*Taxus spp.*)

- Japanese Yew (*Taxus cuspidate*)
 - **Very dangerous cardiotoxin!** “Tree of Death”
 - Common evergreen shrub; most toxic in winter; dried plant retains toxin
 - Toxin: Taxines A & B
 - Directly block myocardial Ca and Na channels
 - Negative inotrope (weaker contraction), AV conduction delay
 - Canine minimum lethal dose = 2.3 grams leaves/kg
 - **Equine and livestock risk** if wreath hung in stable/discarded in pasture

Toxic doses:

- 0.1% body weight in horse
- 0.5% body weight in ruminant

- Cope RB, et al. **Fatal yew (*Taxus sp*) poisoning in Willamette Valley, Oregon, horses.** *Vet Hum Toxicol.* 2004 Oct;46(5):279-81.
- Wilson CR, Sauer J, Hooser SB. **Taxines: a review of the mechanism and toxicity of yew (*Taxus spp.*) alkaloids.** *Toxicon* 2001;39:175-185.



Japanese Yew



All parts toxic (including seed)
except flesh of the aril (fruit).





BULB BRIGADE!



Daffodils & Paper whites

- *Narcissus* spp.
- Most concentrated in **bulb**
- Severe gastroenteritis (\pm hemorrhagic)
- Possible CNS signs (depression)
- Possible GI obstruction



Tulips

- Glycosides, lectins, glycoproteins
- Fleshy plant = GI upset
- More severe signs such as CNS signs seen with **bulb** ingestion



Hyacinth (*Hyacinthus* spp.)

- All parts of plant especially bulb
- Calcium oxalate raphides
- Strong gastric irritant



Amaryllis (*Hippeastrum*)

- Amaryllis (*Hippeastrum*)
 - Contain alkaloids (lycorine and tazetine)
 - Concentrated in bulb and leaves (up to 0.5%)
 - CS: Vomiting, diarrhea, anorexia, salivation, hepatopathy, restlessness, tremors, dyspnea, hypotension, seizures





SAGO PALM

Sago palm (Cycad)

- Found everywhere!
 - Ornamental plants
 - Houseplants
 - Tropical/subtropical plants
- *Cycas* and *Macrozamia* sp.
- Toxic agents:
 - Cycasin
 - Neurotoxin
 - Unknown



Photo courtesy Dr. Karyn Bischoff

Sago palm (Cycad)

- All parts of plant toxic!
- Seed most toxic
- Results in: centrolobular and midzonal coagulative hepatic necrosis
- Deadly in dogs: 50% survival*

*Survival and prognostic indicators for Cycad intoxication in dogs. Ferguson, et al.
J Vet Internal Med 2011; 25:831-837



Sago palm (Cycad)

- Severe clinical signs
 - GIT (e.g., GI hemorrhage)
 - Hepatotoxicity
 - Long-term cardiotoxicity?
- Signs seen within hours
- Increased LFT: 24-48 hours



Sago palm: Treatment

- Decontamination
 - Emesis induction?
 - Activated charcoal: multiple doses
- Baseline blood work
 - CBC
 - Chemistry
 - PCV/TS/BG/liver panel q 24 hours X 3 day
 - PT/PTT
 - Repeat blood work once discharged

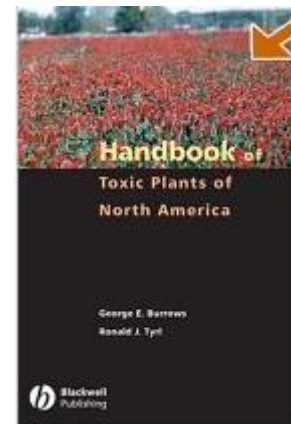
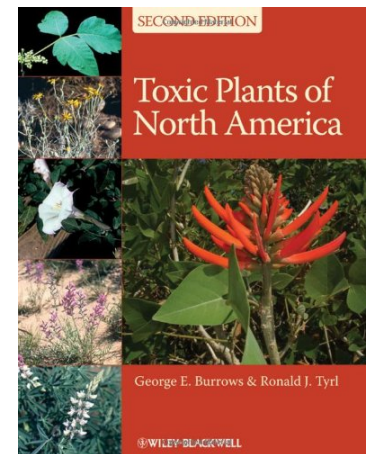
Sago palm: Treatment

- Antiemetics
- Coagulopathy
 - Vitamin K₁ SQ
 - Fresh frozen plasma
- Hepatoprotectants
 - SAMe
 - N-acetylcysteine



Handy References Books

- Toxic plant Bible
 - *Toxic Plants of North America*, 2nd ed., © 2013
 - George E Burrows, DVM, PhD and Ronald J Tyrl, PhD
- Toxic plant mini-Bible
 - *Handbook of Toxic Plants of North America*, © 2006
 - George E Burrows and Ronald J Tyrl
- Other
 - *A Guide to Poisonous House and Garden Plants*, © 2006
 - Anthony P Knight, BVSc., MS, DACVIM



Handy on-line references

- Pet Poison Helpline
 - Website—petpoisonhelpline.com
 - Listing of toxic and non-toxic plants with photos
 - Videos for pet owners
 - Alphabetical list of common names
 - iPhone App – details 200+ toxins, \$1.99
- Cornell University Poisonous Plants Information Database
 - Plant listing as well as general plant toxicology information
 - <http://www.ansci.cornell.edu/plants/index.html>

When in doubt, call for assistance!

- Something you're not familiar or comfortable with
- Human drugs
- Large drug overdoses
- Mixed drug ingestions
- Severe clinical signs
- Animals with preexisting disease



SAVING PETS' LIVES, 24 HOURS A DAY, 7 DAYS A WEEK

PET POISON HELPLINE

2014 PPH Free Webinars



UPCOMING **FREE CE** WEBINARS

ALL LECTURES ARE 1 HOUR OF **RACE-APPROVED CE**



PLANTS POISONOUS TO SMALL ANIMALS

 Date: April 1, 2014

RODENTICIDES... IT'S MORE THAN JUST VITAMIN K!

 Date: June 10, 2014

FOODS TOXIC TO PETS

 Date: October 7, 2014

TEACHING MOMENTS IN TOXICOLOGY

 Date: December 2, 2014

ALL WEBINARS WILL BE GIVEN AT AND PRESENTED BY:

TIME: 12:00-1:00PM CENTRAL TIME (1:00-2:00PM EASTERN)

SPEAKER: AHNA BRUTLAG, DVM, MS, DABT, DABVT



Approved as a New York
State sponsor of continuing
education for veterinarians
and veterinary technicians

REGISTER AT WWW.PETPOISONHELPLINE.COM/VETERINARIANS/WEBINARS

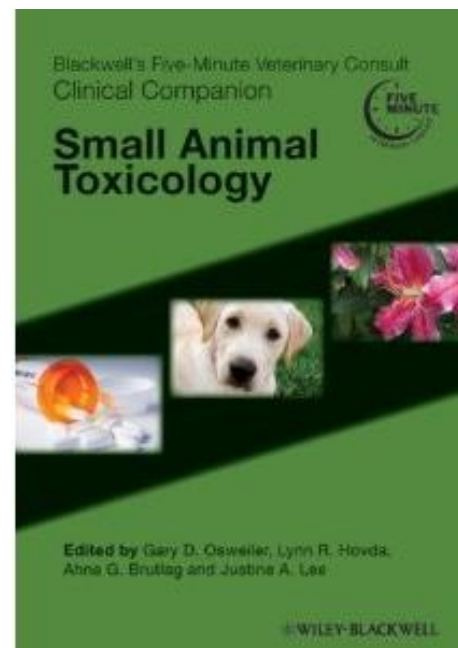
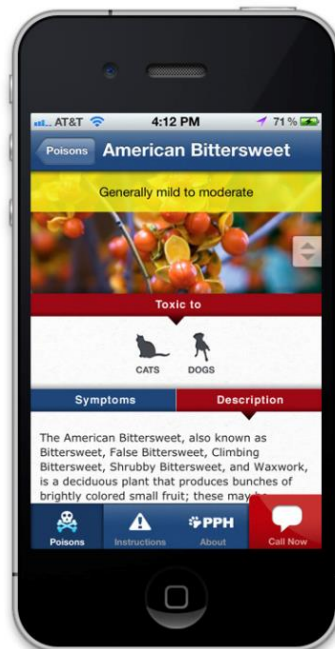
COURSE MEETS THE REQUIREMENTS FOR 1 HOUR OF CONTINUING EDUCATION CREDIT PER LECTURE IN JURISDICTION WHICH RECOGNIZE AAVSB RACE APPROVAL; HOWEVER, PARTICIPANTS SHOULD BE AWARE THAT SOME BOARDS HAVE LIMITATIONS ON THE NUMBER OF HOURS ACCEPTED IN CERTAIN CATEGORIES AND/OR RESTRICTIONS ON CERTAIN METHODS OF DELIVERY OF CONTINUING EDUCATION.



Spring goodies!



**Our iPhone app
Details 200+ toxins
\$1.99**



**100+ chapters for general
and ER practices.
Practical and clinical!
Order from PPH for only \$75
(25% savings).
info@petpoisonhelpline.com**

Free for clinics!

Request one via email

info@petpoisonhelpline.com

Did you get your “wheel of vomit”?

info@petpoisonhelpline.com

For veterinary clinics only – one per clinic!

WHEEL OF VOMIT

For assistance with a patient, call Pet Poison Helpline at **800-213-6680**

866-VET-4VPI
(866-838-4874)

PET POISON HELPLINE
800.213.6680
www.petpoisonhelpline.com

VPI PET INSURANCE

Hydrogen peroxide, 3% (Dosage: 1 ml/kg PO)
Dose listed in ml (FOR DOGS ONLY)

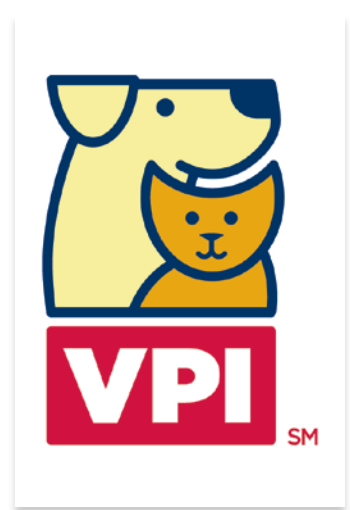
Apomorphine (Dosage: 0.02 mg/kg IV)
Dose listed in mg (FOR DOGS ONLY)

Activated charcoal dose (Dosage: 1 gram/kg PO)
Dose listed in grams (FOR DOG)

Activated charcoal dose (Dosage: 5 grams/kg PO)
Dose listed in grams (FOR DOG)

WEIGHT OF DOG IN POUNDS

©2012 Veterinary Pet Insurance Company. Pet Poison Helpline is a service mark of National Mutual Insurance Company, 11/1/12. Decontamination should only be performed when appropriate. When in doubt, Pet Poison Helpline should be consulted. This calculator should be used as a guideline only. Doses should be based on lean body weight. Please be aware there are ranges in dosing and additional dosing may be necessary. Dosing for hydrogen peroxide, 3% in dogs: Give 1 ml/kg PO; if no emesis in 5-10 minutes, give 2 ml/kg PO. Do not exceed 5 ml/kg PO total. When you should not induce emesis: symptomatic patient, risk of aspiration pneumonia, certain toxicants (e.g. hydrocarbons, corrosives, etc.). Emetics that are no longer recommended: syrup of ipecac, salt, mustard. Activated charcoal is not recommended following ingestion of specific toxicants such as corrosives, ethylene glycol, heavy metals, hydrocarbons, xylitol, paint balls, salt, etc.



Thank you for attending!

CE credit FAQs

1. **When will I get my CE certificate?** We'll email it to you within 24 hrs.
2. **I attended the webinar but wasn't the person who logged in. Can I still get interactive CE credit?** Yes. Send your name and email address to info@petpoisonhelpline.com by 1pm central time, April 2, 2014 (strict deadline).
3. **Can I watch the recorded webinar online for CE credit?** Yes. You can receive non-interactive CE credit. Go to the "For Vets" page on our website, www.petpoisonhelpline.com for more info.

Comments? Questions? Email us! info@petpoisonhelpline.com



Acknowledgements

Tyne Hovda – plant photos

Lynn R. Hovda, RPh, DVM, MS, DACVIM –
editorial commentary



SAVING PETS' LIVES, 24 HOURS A DAY, 7 DAYS A WEEK

PET POISON **HELPLINE**