

Toxicology: Myths, Internet Rumors & Home Remedies

Tina Wismer DVM, MS, DABVT, DABT

ASPCA Animal Poison Control Center

Urbana, IL

Focus

- Poison prevention kit
 - Pet proofing
- Myths, internet rumors
- Common toxins

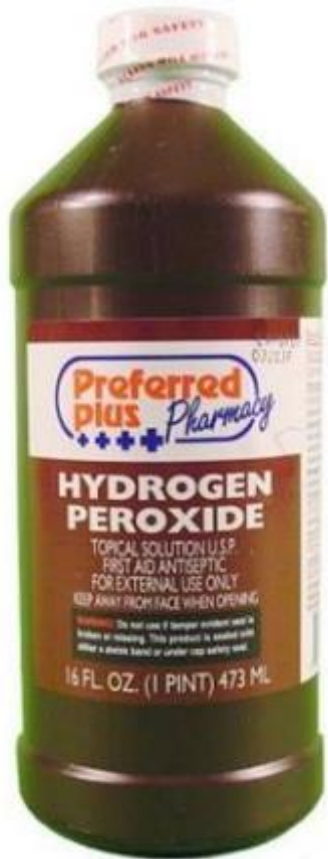
Poisoning??

- Know your client's veterinarian's procedures for emergency situations
 - Phone numbers for your vet, ER clinic
- Do not attempt any therapy without contacting a veterinarian
- If the animal is seizing, unconscious or having difficulty breathing, you should go directly to the veterinarian

Poison Safety Kit

- Fresh bottle of 3% hydrogen peroxide
- Can of soft dog or cat food
- Turkey baster, bulb syringe or large medicine syringe
- Saline eye solution
- Artificial tear ointment
- Mild grease-cutting hand dishwashing liquid
- Rubber gloves
- Forceps or tweezers to remove stingers or ticks
- Muzzle (or length of gauze)

3% Hydrogen Peroxide



- Acts locally by GI irritation
 - Needs to still fizz
- Always ask a vet before giving
- Give 1ml/lb, up to 45 ml
 - Can repeat dose once
- Large doses can cause bloody vomiting and diarrhea
- Cats – no

Ocular Dilution



- Use large quantities of flush to decrease insult to the cornea
 - Tepid tap water
 - Normal saline
 - Artificial tears
- Do not use Visine® or other “get the red out” products
- Flush for 20 - 30 minutes

Dermal Decontamination



- Make sure to wear gloves!
- Never use a solvent
 - Kerosene, paint thinner
- Bathe in liquid dish soap
 - Do not use automatic dish washer detergents
- Rinse copiously with warm water
 - Do not allow animal to get chilled

Glue traps, Asphalt, Pine Sap

- Any oily substance (olive oil, mayonnaise, peanut butter, mineral oil, vegetable oil) can help remove non-water soluble compounds
 - Rub a small amount into the affected area
 - Keep rubbing until substance breaks down into “gummy balls”
 - Wash with liquid dish washing detergent to remove the oily substance



BECAUSE- pets are nosey !



Photo: Rebecca
Strieby



Pet Proofing

- Physical abilities of pet
 - Remember that new pets are not the same as old pets
 - “Lightening fast” toddlers that can climb!
- Remove medications, cleaners, chemicals, laundry supplies
 - Behind secure doors, locked cabinets, child-safety locks
 - High shelves?
- Keep products in original containers, keep labels

Pet Proofing

- Keep foods and trash out of reach
- Changing our own behavior
 - Pet medications should not be kept with human medications
 - Take own medications in room that pet does not have access to



Petproofing





Photo courtesy of Jamie Bobrowski

Is that true???

- Myths, or 'old wives tales'
 - Common in veterinary medicine
- "I know he's sick 'cause his nose is warm."
- "My dogs are brother and sister, they would never have puppies together."

- Internet rumors
 - Modern form of folklore
 - Precautionary advice
 - Evolve over time

‘Badly burned dog’



True or False?

- Animals know what is poisonous or harmful and will not eat it.



Animals know what is
poisonous/harmful and will not eat it

- False!
- If this were true I would not have a job 😊

True or False

- All toxic substances will kill



All toxic substances will kill

- False
- Dose determines the poison
 - Apple seeds contain cyanide, but a borzoi would need to eat more than 2 cups of seeds to have a problem
 - Hepatotoxic mushrooms, one bite can kill

True or False?

- Chocolate gives dogs worms



Chocolate gives dogs worms

- False
- Origin
 - Dogs who eat chocolate may vomit or have diarrhea and the roundworms (already present in the dog) may be seen in the vomit or stool
 - Chocolate and worms both can cause vomiting and diarrhea

Chocolate

- The darker the chocolate, the worse it is
- Vomiting, diarrhea, restlessness
- Increased heart rate, tremors, seizure, death
- Signs may be delayed up to 12 hours



Compound	Theobromine (mg/oz)	Caffeine (mg/oz)
White Chocolate	0.25	0.85
Milk Chocolate	58	6
Semi-sweet Chocolate Chips	138	22
Sweetened Cocoa Mix	138	22
Unsweetened Chocolate	393	47
Unsweetened cocoa powder	737	70
Cocoa Bean Mulch	255	NA

Chocolate

- 60 lb dog
- How much to cause seizures?
 - Milk chocolate = 26 oz
 - Dark chocolate = 10 oz
 - Bakers (unsweetened) chocolate = 4 oz



True or False?

- If you give your dog water after it eats mouse poison it will explode

If you give your dog water after it eats mouse poison it will explode

- False
- Pest control operators, 'This poison causes the mice to leave the house looking for water and once they drink, they explode.'
- No rodenticides cause mice to explode
- PCO doesn't want you knowing that the mice are dying inside the walls of your house

Rat and Mouse Poison

- Blocks, pellets and granules
- Blue, green, red or tan
 - Color does not indicate what type
- Bleeding
- Kidney failure
- Brain swelling



True or False?

- To prevent heartworm in dogs, once a year you give two copper pennies by mouth



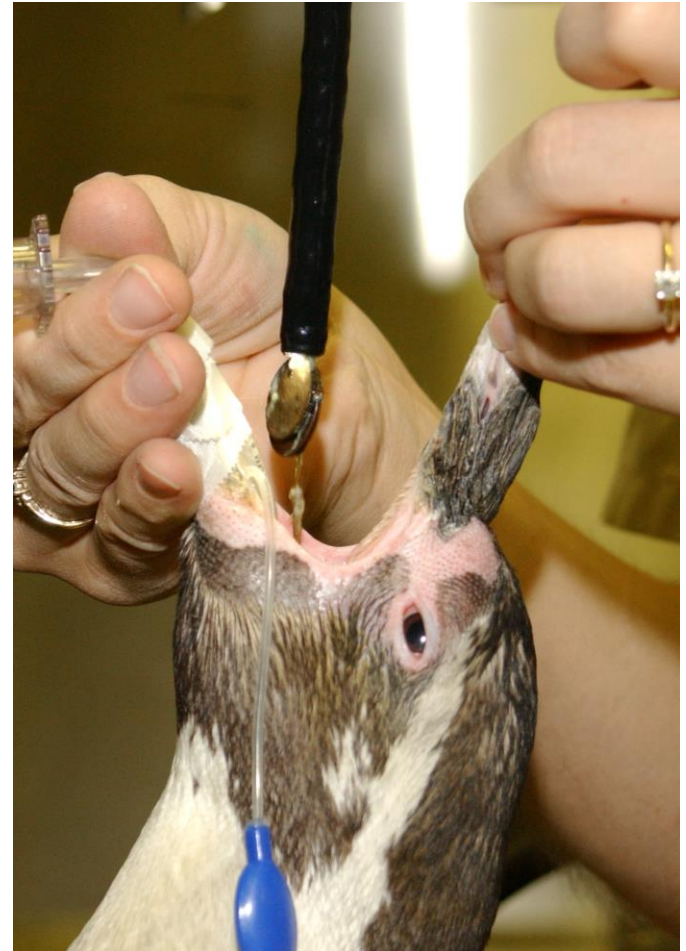
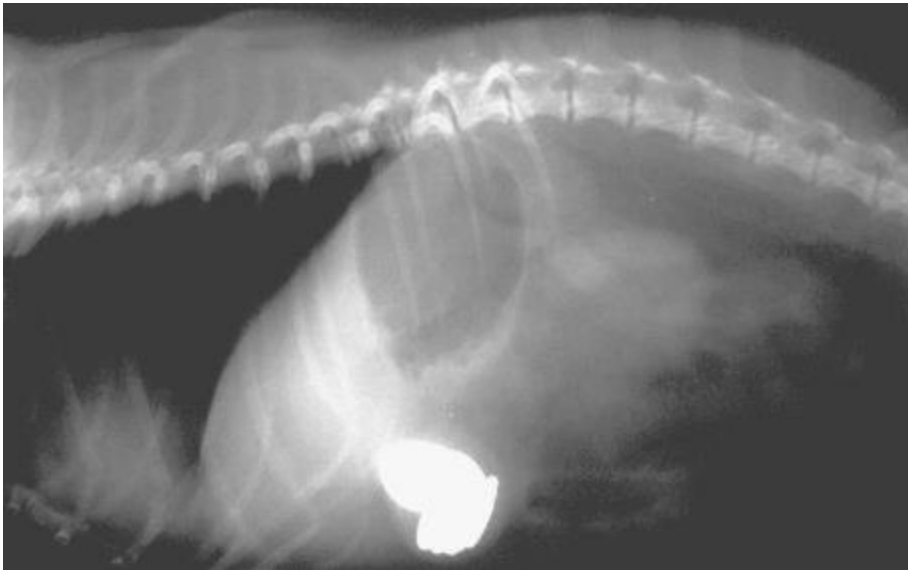
To prevent heartworm in dogs, once a year you give two copper pennies by mouth

- False
- Copper in the pennies is attracted to the heart and will kill the worms
- Pennies cause zinc toxicity
 - Anemia, renal failure



Pennies

- X-ray
- Endoscope or surgical removal



True or false?

- Garlic is a natural way to get rid of fleas



Garlic is a natural way to get rid of fleas

- False
- Garlic is not efficacious for treating fleas
- Can cause anemia
 - Dogs > 10 g/kg of fresh garlic (or its equivalent) may be a problem

Selected Toxins

Silica Gel Dessiccants

- Chemically and biologically inert
- Mild GI signs possible



Toilet Water (Tank Drop-Ins)

- Concentrated forms (gels, tablets) may be corrosive
- GI irritants once diluted in toilet water



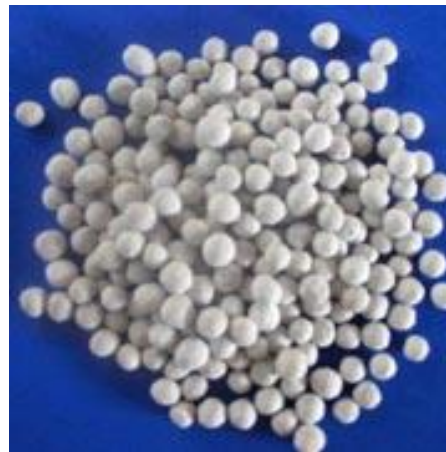
Ant and Roach Baits

- Much safer than 10-20 years ago
- Inert ingredients such as peanut butter, breadcrumbs, sugar and vegetable or animal fats
- Plastic/metal = obstruction



N-P-K fertilizers, Bone meal

- Low toxicity
 - Vomiting, diarrhea
- Added insecticides, herbicides or iron
 - Increase toxicity



Paints

- Latex
 - Mild stomach upset if ingested
- Oils
 - Stomach upset, risk of aspiration
 - Heavy metals - artist's paints
- Do not use solvents to remove



Polyurethane Adhesives

- Expanding wood adhesives
 - Gorilla Glue[®], Elmer's ProBond[®]
- Large gastric foreign bodies requiring surgery





2 ounces of glue in a 60 pound dog



The finished product!

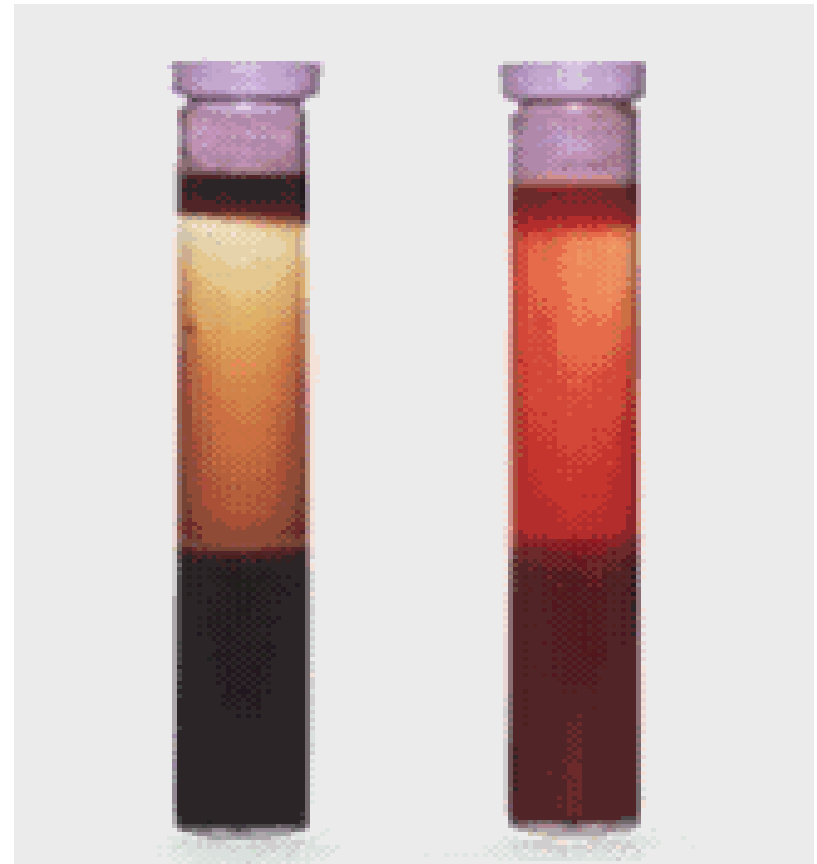
Acetaminophen

- Non-aspirin pain reliever
- Always contact your veterinarian before giving any over the counter medication.



Acetaminophen

- Changes blood so it can't carry oxygen
 - Gums and blood muddy brown in color
- Liver failure



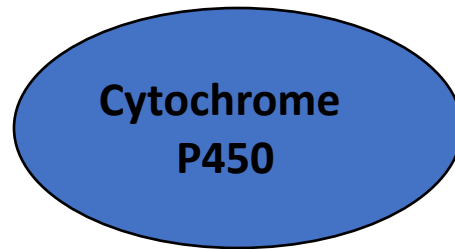
Bella



ACETAMINOPHEN

Glucuronide
Conjugate
(non-toxic)

Sulfation
Conjugate
(non-toxic)



Cytochrome
P450

NAPQI

PAP

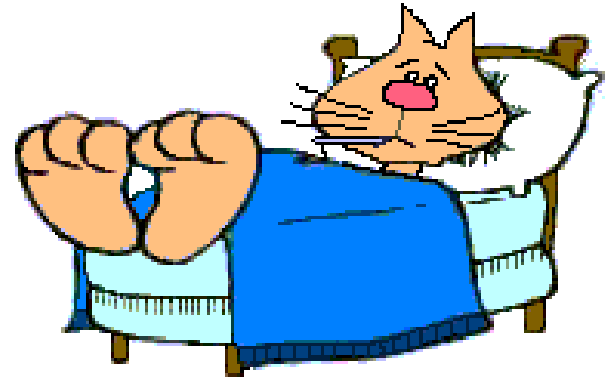
Methemoglobinemia
Cats, dogs (high dose)
8 sulfhydryl groups on cat
hemoglobin vs 4 in dogs vs
2 in humans

Liver failure

Dogs, Humans (rarely
cats)

Kidney failure (rare)
Humans

Acetaminophen



- How much is too much?
- Toxic Doses for 60# dog
 - Liver toxicity – 6 extra strength (500 mg) tablets
 - Methemoglobinemia – 12 extra strength (500 mg) tablets
- There is no safe acetaminophen dose for cats

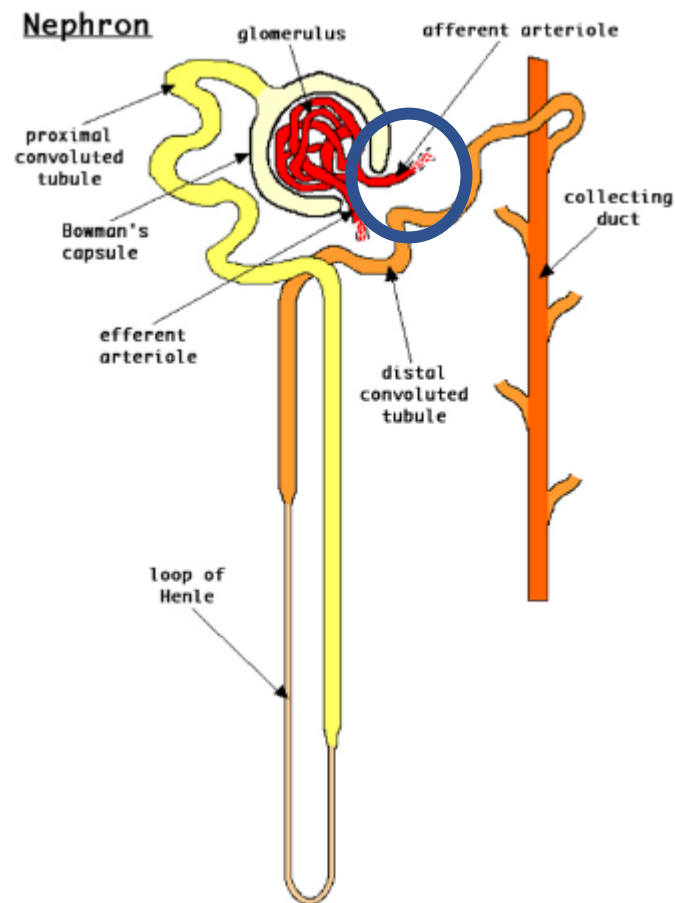
Ibuprofen/naproxen

- Non-steroidal anti-inflammatories
- Ibuprofen
 - Motrin[®], Advil[®]
- Naproxen
 - Naprosyn[®], Aleve[®]
- Stomach ulcers, kidney failure



Ibuprofen/naproxen

- NSAIDs decrease pain and inflammation by stopping the production of prostaglandins
 - However prostaglandins also do good things in the body
- ↓ prostaglandins
 - ↓ blood flow to stomach, ↓ mucus layer in stomach, ↑ stomach acid = stomach ulcers
 - ↓ decrease blood flow to kidney = kidney cell death



Ibuprofen: overdose

- 60 lb dog
 - 12 pills for stomach ulcers
 - 24 pills for kidney failure
- Prognosis: good if caught early
 - GI protectants, IV fluids for 48 hours

Naproxen

- Extensive body recirculation
 - Prolonged half life = 74 hours in dogs
- Stomach ulcers, kidney failure

- One pill in 60 lb dog
 - Stomach ulcers
- Two pills
 - Kidney failure



Ethylene Glycol



- Automotive antifreeze
- Aircraft de-icers
- Brake fluids
- Home solar units
- Condensers/heat exchangers
- Portable basketball goal post bases
- Winterizing toilets

Ethylene Glycol

- Any exposure should be considered potentially serious
- Cats, rabbits most sensitive
- Humans, dogs
- Kidney failure, seizures, death



Plants



Alison West 2007

“Well it has green leaves” ...

- Plant identification is always a big problem
 - Many different common names
 - Same common name for different plants
- Even “non-toxic” plant material may cause mild GI upset if ingested

Spring blooming bulbs

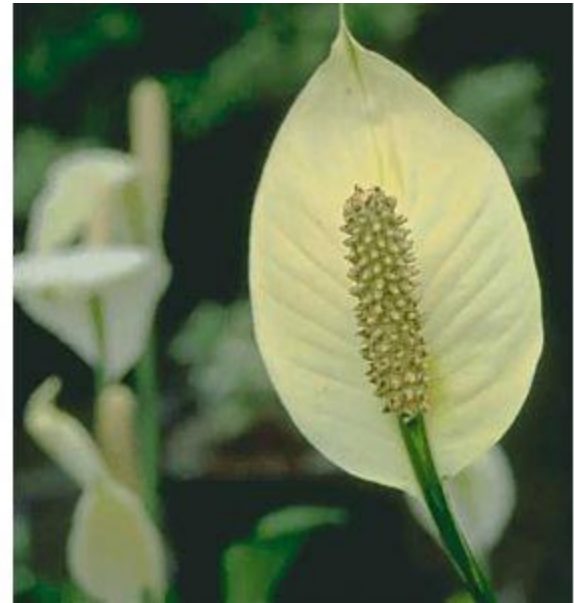
- Tulips, daffodils, amaryllis



- Leaves, flowers = stomach upset
- Bulbs = bloody vomiting, tremors, seizures

Insoluble Calcium Oxalates

- Found in many common houseplants
- Shiny, thick green leaves



Philodendron spp.



- Philodendron
- Panda plant
- Parlor ivy



Dieffenbachia spp.

- Dumbcane
- Dieffenbachia



Spathiphyllum spp.

- Peace lily
- White anthurium
- Mauna loa
- Spathe flower



Epipremnum areum



- Pothos
- Heartleaf vine
- House ivy
- Devil's ivy



Insoluble calcium oxalates

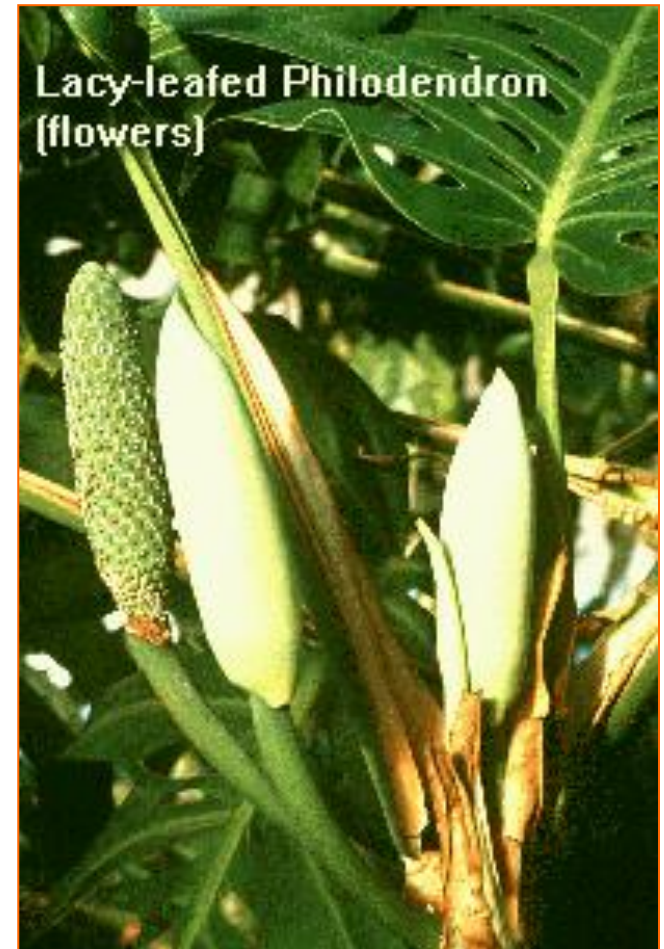


- *Epipremnum* spp.
 - Pothos, devil's ivy
- *Zantedeschia* spp.
 - Cala lily

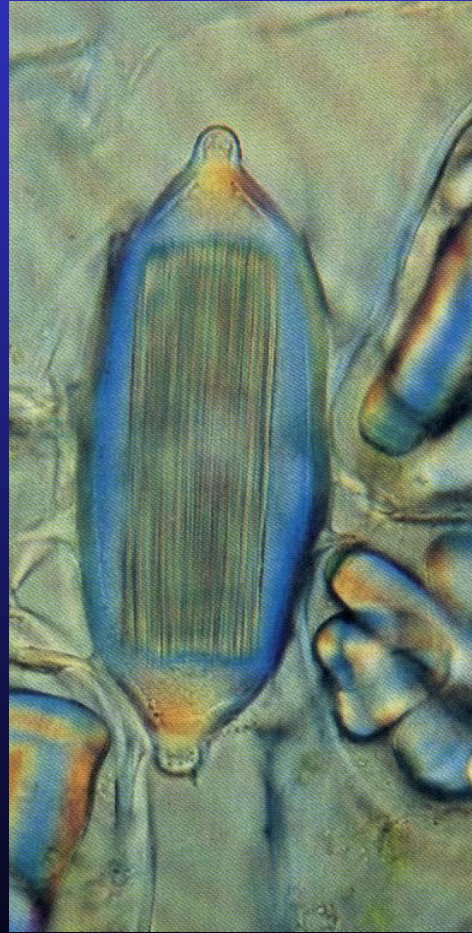


Insoluble calcium oxalate-containing plants

- Many, many others
 - *Alocasia antiquorum*
 - *Anthurium* spp.
 - *Arum* spp.
 - *Calla palustris*
 - *Syngonium podophyllum*
 - *Monstera* spp.
 - *Caladium* spp.
 - *Schefflera* spp.



Calcium Oxalate Crystals



Calcium Oxalate Plants

- Oral irritation, drooling, gagging, vomiting
 - Usually self limiting
- Concern with swelling in throat
- Milk or yogurt may aid in easing discomfort



Poinsetta

- Vomiting



Cycad (Sago)Palms

- Native to FL
- Houseplants
- All animal species susceptible
- Liver failure
 - Toxin destroys liver cells



Cycad Palms

- All parts of the plant are poisonous
 - Highest levels of toxins in the seeds
- Dogs
 - 1-2 seeds have caused vomiting, liver failure and death



Foods

Grapes and Raisins



- Kidney failure
- Toxic principle is thought to be tartaric acid
 - High in grapes and tamarind
 - Dogs uniquely sensitive

Grapes and Raisins



- How much is too much?
 - 0.7 oz/kg of grapes
 - 0.1 oz/kg of raisins
- Anecdotal cases of 1 raisin??
- Cooking decreases risk

Macadamia nuts

- Dogs
- Weakness, vomiting, tremors
- Signs last 12-48 hours
 - Most recover on their own
- No long term effects are expected



Sugarless Gum/Candy

- Read the label
 - Aspartame (NutraSweet®)
 - Saccharin
 - Sucralose (Splenda®)
 - Sorbitol
 - Maltitol
- Xylitol – not safe in dogs

Xylitol



- Sugar alcohol
- Used in sugar-free chewing gums, candies and for baking
- Dogs
 - Stimulates insulin release for several hours
 - Hypoglycemia
 - Liver failure



Bread Dough

- Raw yeast dough
- Gastric distention
- Ethanol production



Moldy Food

- Garbage, compost piles
 - moldy meat, nuts, fruit, pasta and dairy products
- Tremors, seizures





Marijuana (*Cannabis sativa*)



- Contains at least 61 cannabinoids and > 300 other substances
 - THC (Δ -9-Tetrahydro-cannabinol)
- Fresh plant: minimally toxic
- Toxicity \uparrow
 - Heating, drying, smoking, aging



Marijuana

- More cases
 - Truly an increase in intoxicated pets?
 - Changing attitudes?
 - More potent forms?



Potency and changing exposures

- Increasing Potency
 - THC levels have more than doubled in the last 25 years
- Past: plant material from baggies or joints
- Now: Edibles (cookies, brownies, etc.) and concentrates (oils, waxes, shatters)
- While both dogs and cats willing ingest plant material, dogs are the most likely to consume edibles

Human dosing of THC products

- THC 10 mg



Marijuana - Clinical Signs

- Most common signs
 - Depression (25% agitated)
 - Ataxia
 - Incontinence (dribbling urine)
 - Hyperesthesia (over reaction to stimuli)
- Coma, hypotension, death (concentrates)
- If your pet is unresponsive or cannot walk, it needs to go to the vet

Points to remember:

- Keep things out of reach of your pet
 - Pet proof your home and garden
- Keep pesticide labels
- Learn genus and species names of plants
- Remember that new pets are not the same as old pets

Questions?

