

# Spring Toxicity QUICKGUIDE



Rhododendrons



01.

### *Rhododendron* spp. and *Kalmia* spp.

TOXICANT	Grayanotoxins, found in all parts of plant
MOA	Grayanotoxins bind and slow down the opening and closing of sodium channels, resulting in more persistent depolarization
CLINICAL SIGNS	Vomiting, bradycardia, hypotension, lethargy, weakness, ataxia, disorientation or agitation, tremors, dyspnea
DURATION	Signs may last 24-72 hours
TREATMENT	Decontamination, if appropriate (e.g., emesis, activated charcoal); antiemetics; fluid therapy; electrolyte monitoring; rarely, atropine for treatment of bradycardia and benzodiazepines for treatment of agitation may be indicated.

Spring crocus



02.

### *Tulipa* spp., *Hippeastrum* spp., *Hyacinthus* spp., *Crocus vernus*, *Galanthus* spp., & *Narcissus* spp.

TOXICANT	Alkaloids; some may also contain calcium oxalate crystals
MOA	GI irritation
CLINICAL SIGNS	Vomiting, hypersalivation, depression, diarrhea; less commonly tachycardia, dyspnea, skin irritation, tremors, seizures, arrhythmias
DURATION	Signs may last 2-24 hours
TREATMENT	Decontamination, if appropriate (e.g., emesis, activated charcoal); symptomatic and supportive care ; fluid therapy (e.g., SQ or IV); anti-emetics; possible abdominal radiographs to rule out foreign body obstruction

Day Lily



03.

### *Lilium* spp. & *hemerocallis* spp.

TOXICANT	Unknown (only cats affected)
MOA	Proximal renal tubular necrosis leading to obstructive nephropathy
CLINICAL SIGNS	Vomiting, depression, and anorexia, which progresses to anuric AKI in 1-3 days. Clinicopathologic testing reveals severe azotemia, epithelial casts (12-18 hours post-ingestion) on urinalysis, proteinuria, and glucosuria
DURATION	Signs begin within a few hours, duration depends on extent of renal compromise
TREATMENT	Decontamination, if appropriate (e.g., emesis, activated charcoal); GI support (e.g., anti-emetics, H <sub>2</sub> blockers, etc.); IV fluid therapy for approximately 48-72 hours (or until resolution of azotemia)

Lily-of-the-valley



04.

### *Convallaria* spp.

TOXICANT	Cardiac glycosides
MOA	Block Na-K-ATPase pumps in cardiac muscle, leading to arrhythmias and hyperkalemia
CLINICAL SIGNS	Vomiting, weakness, arrhythmias, death
DURATION	Signs can occur within a couple of hours and last a couple of days
TREATMENT	Decontamination, if appropriate (e.g., emesis, activated charcoal); antiemetics; omeprazole; antiarrhythmics, if needed - digoxin Fab fragments may be antidotal

Lenten Rose or Christmas Rose



05.

### *Helleborus* spp.

TOXICANT	Mixture of protoanemonin (vesicant), saponins, and cardiac glycosides
MOA	Protoanemonin causes blisters; saponins cause GI signs; cardiac glycosides lead to cardiac arrhythmias
CLINICAL SIGNS	Vomiting, weakness, arrhythmias, death
DURATION	Signs can occur within a couple of hours and last a couple of days
TREATMENT	Decontamination, if appropriate (e.g., emesis, activated charcoal); antiemetics; antacids; antiarrhythmics, if needed - digoxin Fab fragments may be antidotal

Iris



06.

### *Iris* spp.

TOXICANT	Pentacyclic terpenoids
MOA	Pentacyclic terpenoids cause GI irritation
CLINICAL SIGNS	Vomiting, hypersalivation, diarrhea, lethargy
DURATION	Signs can occur within 2-hours and generally last 24 hours
TREATMENT	Decontamination, if appropriate (e.g., emesis only); antiemetics; fluid therapy PRN; bland diet; consider radiographs with persistent clinical signs as rhizomes may cause a foreign body obstruction

Yesterday, Today, and Tomorrow



07.

### *Brunfelsia* spp.

TOXICANT	Brunfelsamidine, hopeanine, and scopoletin
MOA	Toxicants result in GI irritation, central nervous system signs, and cardiotoxicity
CLINICAL SIGNS	Vomiting, hypersalivation, ataxia, tremors, seizures, cardiac arrhythmias
DURATION	Signs can occur quickly, with seizures reported within 15 minutes; duration of clinical signs is 12 hours to 3 days with mild neurologic signs taking several weeks to fully resolve
TREATMENT	Decontamination must be considered with care, as onset of seizures can be very rapid; hospitalization for neurologic & cardiovascular monitoring; antiemetics; methocarbamol for tremors; anticonvulsants for seizures; antiarrhythmics; IV fluids for hydration, to prevent myoglobinuric injury to kidneys, to optimize perfusion, and aid in thermoregulation

### Abbreviations

- AKI: acute kidney injury
- Fab: fragment antigen-binding
- GI: gastrointestinal
- IV: intravenous
- MOA: Mechanism of action
- SQ: subcutaneous

