

# **Lilies and Cats - Be Aware of These Poisonous Plants in Our Furry Felines**

Easter is just around the corner in many parts of the world. With this holiday comes a bounty of delectable sweet treats and gorgeous flower arrangements. Indeed, there aren't many things that are more stunning than fully bloomed Easter lilies. Unfortunately, those plants and many lilies are exceedingly toxic to cats. Given the proximity to the Easter holiday, I wanted to dedicate some time to educating feline parents about this important toxicity.



Photo by Krysten Merriman

## **Lilies - Which ones are toxic?**

There are dozens of lily plants! These flowers belong to the large family called

*Liliaceae*. Within this family are more than 160 genera of plants. In cats, the genera about which we are concerned are *Lilium* and *Hemerocallis*.

*Lilium* species. are called “true lilies” and include:

- Asiatic (*L. asiatic*)
- Asiatic hybrid (*L. elegans*)
- Tiger (*L. lancifolium*)
- Stargazer (*L. orientalis*)
- Rubrum (*L. speciosum rubrum*)
- Red / Western / Wood (*L. umbellatum*)
- Easter (*L. longiflorum*)



Easter lilies (*Lilium longiflorum*)

*Hemerocallis* species are “day lilies”, and include:

- Day lilies (*H. dumortierei*; *H. fulva*)
- Orange day lilies (*H. graminea*)

- Early day lilies (*H. sieboldii*)



Orange day lily (*H. graminea*)

Some plants are called lilies, but really aren't at all. For example:

- Calla lilies (*Zantedeschia*)
- Peace lilies (*Spathiphyllum*)
- Lily of the Valley (*Convallaria majalis*)



Lily of Valley (*Convallaria majalis*)

One should note these plants still pose a toxic threat to pets, but the toxic principle is different *Lilium* and *Heimerocallis* species.

## **Lilies - Why are they toxic?**

To date, veterinarians don't know the exact mechanism of toxicity. But what we do know is all parts of the plant are toxic - leaves, stems, pollen, and even water from vases! We do know the toxic component is water soluble and may be a mixture of compounds called steroidal glycoalkaloids, specifically solasodine trisaccharides. The poisonous compounds seem to target the kidneys and the pancreas. The toxin attacks mitochondria, the proverbial power plant of cells, to negatively affect function and energy production. In the kidneys, the result is rapidly progressive acute kidney injury due to sloughing of dying structures called renal tubular epithelial cells. In the pancreas, special cells called acinar cells progressively degenerate.

## **Lilies - What does intoxication look like?**

The diagnosis of lily toxicosis is relatively straightforward. Pet parents should immediately seek medical treatment for any cat suspected or known to have ingested or chewed any part of a lily plant. Cats with lily intoxication typically develop clinical signs within 12 hours. Without treatment, death often occurs 3-5 days after exposure. Rarely, cats succumb within a few hours of intoxication.

Common clinical signs are:

- Vomiting
- Lethargy & weakness
- Reduced (or loss of) appetite
- Change in thirst (increased or decreased)
- Depression
- Drooling (called ptyalism)
- Unsteadiness while walking (called ataxia)
- Increase vocalization
- Seizures
- Abnormal urination (increased or decreased frequency)

Veterinarians should evaluate blood and urine samples from cats with lily intoxication. Evidence of acute kidney injury is often present, including severe derangements in values called blood urea nitrogen (BUN), creatinine (CREA), phosphorus, potassium, amylase, and creatine kinase. Examination of urine is imperative and unfortunately neglected by many veterinarians. As the mantra goes, don't forget the liquid gold! The urine of intoxicated cats may show important changes, including excess glucose, dilutional changes, and epithelial casts.

## **Lilies - How is intoxication treated?**

Treatment of lily intoxication requires aggressive and timely interventions in a facility that can provide around-the-clock care. Your family will likely recommend transfer to a referral specialty hospital where may be directed by either a board-certified veterinary emergency and critical care specialist or internal medicine specialist.

Depending on a variety of factors, including how rapidly pet parents seek

veterinary care for a cat with lily intoxication, veterinarians may induce vomiting in intoxicated cats. They may also administer a medication called activated charcoal. By vomiting affects cats and then administering activated charcoal, one may prevent or at least reduce the amount of toxin absorbed.

As mentioned earlier, the toxin attacks the kidneys and can induce acute kidney injury. As a result, the ability to produce urine is often dramatically affected. Urine production increases in some patients, but dramatically decreases and even ceases on others. For those patients still able to make adequate volumes of urine, aggressive intravenous fluid therapy is of paramount importance. Studies have repeatedly shown patients for whom fluid therapy is initiated soon after lily ingestion have improved outcomes. The duration of fluid therapy is typically 2-3 days, but many require a longer period of treatment. Patients who are unable to make urine require more aggressive intervention, including renal replacement therapy (i.e.: peritoneal dialysis, hemodialysis). Unfortunately, patients who can't produce urine have poorer prognoses, and there are limited facilities that provide renal replacement services.

Patients with lily intoxication also benefit from a variety of supportive therapies, including:

- Anti-nausea medications
- Stomach protective drugs
- Nutritional support

## **The take-away message about lilies in cats...**

Lilies (*Lilium* spp.) and day lilies (*Heimerocallis* spp.) are highly poisonous plants to cats. All parts of these plants are toxic. The toxin induces severe kidney damage and even pancreatic inflammation. Cats who receive early and aggressive treatment have good prognoses, but those who don't receive timely veterinary care and those with acute kidney injury have more guarded outlooks. Patients who are unable to produce urine have poor prognoses. Cat parents should seek immediate veterinary medical attention for any feline friend known or suspected to have ingested or chewed any part of a lily.

To consult with a team of board-certified veterinary toxicology experts, please visit the [ASPCA Animal Poison Control Center](#).

To find a board-certified veterinary emergency and critical care specialist, please visit the [American College of Veterinary Emergency and Critical Care Specialist](#).

To find a board-certified veterinary internal medicine specialist, please visit the [American College of Veterinary Internal Medicine Specialist](#).

Wishing you wet-nosed kisses,

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