

Pyrethrins and Cats - A Life-Threatening & Avoidable Feline Toxicity

Fleas are disgusting. Honestly, every time I see one I get the heebie-jeebies. I immediately need to take a shower. This is just one of many reasons why I'm a huge proponent of flea control, and I strongly recommend pet parents speak with their primary care veterinarians about the best preventative for their fur babies. Unfortunately, improper use of certain flea control products can be deadly in cats. Toxicity caused by improper use of chemicals called pyrethrins can lead to death. Pyrethrin intoxication is sadly common, so I wanted to devote time to raising awareness of this life-threatening issue. Please share with other cat parents you know. Happy reading!



Pyrethrins - What are they?

Pyrethrins are natural products derived from the chrysanthemum flower, and they are rapidly degraded by both the environment and certain insects. Pyrethroids are synthetic pyrethrins that have been chemically modified to enhance their stability, thus prolonging their efficacy. Common pyrethrins and pyrethroids include:

- Allethrin
- Cyhalothrin
- Fluvalinate
- Tetramethrin
- Pyrethrin I & II

- Permethrin
- Phenothrin



Pyrethrins and pyrethroids are rapidly absorbed when ingested by mouth. In the body, these chemicals slow the closure of sodium and chloride channels, resulting in hyperexcitability. Interestingly, this effect is enhanced at colder temperatures. These channels are abundantly found in several parts of the body, including muscle, the central nervous system (CNS), and salivary glands. When applied topically, these products can irritate the site of application (called dermal paresthesia).

Flea sprays, powders, and shampoos contain pyrethroid concentrations less than 1% - this concentration is highly unlikely to cause intoxication in cats. Furthermore, products contain less than 0.2% permethrin are considered safe for our feline friends. Toxicity develops when cats are accidentally exposed to high concentrations of pyrethroids in products intended for dogs. Common examples include:

- Improperly diluted pyrethroid “dips” - 5-15% pyrethroid
- “Spot-on” pyrethroid products - 20-85% pyrethroid

Pyrethrins - What does intoxication look like?

Cats of any breed, sex, and age can be affected. Factors that influence toxicity in cats are chiefly the concentration of a product, and the type & number of synergists and carriers in the product. Given the effects on sodium and chloride

channels, clinical signs are:

- Hypersalivation / drooling (called ptyalism)
- Elevated or low body temperature
- Vomiting
- Hyperexcitability
- Tremors
- Unsteadiness while walking (called ataxia)
- Panting
- Difficulty breathing
- Seizures
- Licking and/or scratching at the application site

Please watch the video below to see a cat with marked pyrethrin / pyrethroid intoxication. Viewer discretion advised, as the images may be upsetting to some people.

Pyrethrins - How is intoxication diagnosed?

Diagnosis of pyrethrin and pyrethroid intoxication is relatively straightforward. Pet parents know the product that was applied to their cat and/or the pet is showing clinical signs consistent with intoxication. When families don't recognize the toxic potential of a flea product, a greasy or oily patch of fur can be a helpful clue for veterinarians. The doctor can submit various tissue samples (e.g.: hair, fat, brain, etc.) to screen for elevated pyrethrin levels if needed.

Pyrethrins - How is intoxication treated?

The first step of treatment of pyrethrin / pyrethroid toxicity is controlled tremors and/or seizures. Several medications are available to veterinarians to achieve this goal, including:

- Methocarbamol
- Benzodiazepenes (e.g.: diazepam, midazolam)
- Propofol
- Phenobarbital

Once tremors and/or seizures have been effectively controlled, efficient

decontamination is essential. Cats should be bathed in warm water with a mild liquid dishwashing detergent (e.g.: Dawn). Multiple baths are typically needed, so “rinse, lather, repeat” as needed. Patients should be kept warm post-bathing to prevent increased activity of any residue toxin at lower body temperatures.



Mild dishwashing detergents like Dawn should be used to decontaminate a cat's skin and fur

With severe intoxications, family veterinarians will likely recommend referral to an emergency and critical care hospital with advanced treatment and monitoring capabilities. Board-certified emergency and critical care specialists may recommend infusion of a special fluid called intravenous lipid emulsions (ILE). Decontamination of the gastrointestinal tract is rarely needed unless a cat has ingested a massive amount of toxic substance.

Cool compresses, vitamin E applied topically to the site of application, and diphenhydramine (Benadryl®) may be used for patients with skin irritation. Providing a tasty liquid can be helpful for helping get rid of the adverse taste and resolve excessive drooling. Intoxication can be lethal. With prompt and aggressive intervention, most patients recover within 1-3 days.

The take-away message about pyrethrin intoxication in cats...

Pyrethrins and pyrethroids are chemicals found in various flea control products. When cats are exposed to products with high concentrations of these chemicals, toxicity develops. Patients who have their clinical signs, particularly tremors and seizures, rapidly controlled, and who are thoroughly decontaminated typically have good prognoses.

To speak with veterinary toxicology experts, please visit the ASPCA Animal Poison Control.

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

Wishing you wet-nosed kisses,

CriticalCareDVM