

# New Study Highlights Medication Risks for Cats

Researchers find that a common ingredient in parasite preventives can lead to severe neurological issues in cats with the MDR1 mutation.

Analysis by Dr. Karen Shaw Becker

## STORY AT-A-GLANCE

- A recent study by Washington State University researchers revealed that cats with the MDR1 mutation — an estimated half million in the U.S. alone — could be at risk of a severe or even fatal neurological reaction to the active ingredient in popular parasite preventives
- The problematic ingredient is eprinomectin, found in products like NexGard COMBO and Centragard, which can enter the brain of cats with the MDR1 mutation and cause serious neurological toxicity; if you have one or more feline family members and give parasite preventives, you'll definitely want to have your pet(s) genetically tested for the MDR1 mutation
- Permethrin is another parasiticide ingredient that is highly toxic to cats; many, if not most spot-on flea/tick products for dogs have the potential to poison your cat
- In 2010, the EPA issued an advisory on approximately 70 spot-on flea and tick control products due to a dramatic increase in reports of skin irritation, skin burns, seizures, and death; in 2018, the FDA issued an alert on another chemical insecticide, isoxazoline due to the potential for neurologic adverse events in dogs and cats
- For the health and safety of your pet, especially if you have a cat or small dog, it's very wise to find natural, nontoxic pest preventives

Based on the results of a recently published study,<sup>1</sup> researchers at Washington State University (WSU) are warning pet parents and veterinarians that over a half million cats in the U.S. could be at risk of a severe or even fatal neurological reaction to the active ingredient in some top-selling parasite preventives.<sup>2</sup>

According to a WSU Insider news release on the study, the problematic ingredient is eprinomectin, found in products like NexGard COMBO and Centragard. Cats with the MDR1 genetic mutation are at risk of severe adverse effects, because they lack a protective mechanism that prevents certain drugs, including eprinomectin, from entering the brain and causing serious neurological toxicity.

*"Almost every week we receive reports about someone's pet cat having serious reactions to eprinomectin," said lead researcher Dr. Katrina Mealey, a WSU veterinarian and pharmacologist. "This is not an issue with the drug itself — the problem lies in the genes of 1% of cats. That is a sizable number considering there are over 60 million pet cats in the U.S., and we're trying to increase general awareness of these risks."<sup>3</sup>*

For the record, I don't agree the problem lies with the cats, and fail to see how "this is not an issue with the drug itself," when the drug in question is specifically marketed for cats yet puts over a half million of them at risk of a severe reaction up to and including death.

## Will the FDA Step Up With Warning Labels?

The WSU College of Veterinary Medicine researchers conducted their investigational study in response to an increasing number of reports of adverse neurological reactions following the marketing of the eprinomectin-containing products in the U.S.

They reviewed the medical records of 33 cats who became extremely ill or died after treatment with parasite preventives containing eprinomectin to rule out any other potential cause of neurological toxicity. In 14 cats, most of whom were under 10 years of age, no other reasonable cause was identified, and 8 of the 14 were homozygous, meaning they had two copies of the same gene the MDR1 mutation. Three of those cats died.

*"While this appears like a small number of cases, we consistently receive new reports. If this were happening in human patients, federal agencies would be issuing regulatory actions immediately," Mealey said. "The results indicate cats with the MDR1 mutation are at high risk for experiencing serious adverse effects from products containing eprinomectin, and they should not be treated with these products."*

Mealey is hopeful the findings will lead the FDA to consider warning labels on products containing eprinomectin:

*"Pet owners really should be aware of the risk to their pets. Based on the data in this study, I hope the FDA acts to conduct a timely review of the current labeling standards and adopts the modifications necessary to protect the health and lives of cats with the feline MDR1 mutation treated with this product."*

## At-Risk Cats and Signs of Eprinomectin Toxicity

If you have one or more feline family members and give parasite preventives, you'll definitely want to have your pet(s) genetically tested for the MDR1 mutation. Mealey actually discovered the mutation and invented the first test to detect it. She believes the test would have identified at-risk cats in the study and saved more than half of them.

*"I recommend the test for all cats, preferably when they are kittens," Mealey said. "If your veterinarian knows your pet has the MDR1 mutation, he or she can ensure only safe medications and doses are administered."*

An earlier study that tested cats for MDR1 found the gene mutation to be present in 126 out of 11,036 (1.1%) cats, including the Balinese, Maine Coon, Maine Coon Polydactyl, Ragdoll, Siamese, Turkish Angora, and non-pedigreed cats.<sup>4</sup>

Cats with the MDR1 mutation who are exposed to eprinomectin can develop a number of symptoms in the 12 hours after product application, including:

- Loss of coordination
- Dilated pupils
- Increased salivation

- Coma
- Tremors
- **Seizures**
- Partial paralysis
- Death

In addition, some cats in the WSU study were unable to retract or use their tongue completely for days to weeks after eprinomectin application.

## Parasiticides and Cats

I've been warning about the potential **dangers of spot-on flea and tick products** for at least 15 years, first at Healthy Pets, and now here at bark&whiskers. It's incredibly disturbing that animal companions continue to be inadvertently poisoned by pest-killing chemical agents in flea/tick products.

In a 2019 incident, a cat in Missouri was accidentally poisoned by permethrin, an ingredient in a flea control product for dogs.<sup>5</sup> It was a spot-on product applied to a dog, and the cat came in contact with the dog.

Permethrin is so dangerous for cats that if a kitty is exposed, symptoms such as dilated pupils, drooling and muscle tremors can appear within five to ten minutes. Seizures can begin within a half hour. If you think your cat has been in contact with this chemical, the recommendation is to put him in warm water and bathe him with dish soap followed by an immediate trip to your veterinarian or the nearest emergency animal hospital.

PLEASE NOTE: Dish soap (many wildlife rescuers recommend **Dawn**) works in emergency situations to quickly and thoroughly remove toxic residues from pet fur. I am NOT recommending dish soap as a pet shampoo.

Other parasiticides used in flea/tick products for dogs are also deadly for cats. In 2013, four cats died in a four-week period after their owners treated them with spot-on products intended for dogs.<sup>6</sup> Neither the names of the products nor the parasiticides they contained were mentioned. In one case, the owners noticed fleas on both their cats, so they applied "just a drop" of a topical spot-on flea treatment on each kitty.

Within hours both cats became very ill, and one began convulsing. The owners rushed them to a veterinary clinic, but neither survived. Sadly, the owners knew the flea treatment was intended for dogs but figured a small amount would be safe for their kitties.

## Spot-on Products Are High Risk for Cats and Small Dogs

Despite the constant drumbeat from veterinary drug manufacturers, conventional veterinarians, and increasingly, print and broadcast ads promoting flea and tick preventives, needless to say, these chemicals aren't as harmless as their advocates would have us all believe.

Several years ago, the Environmental Protection Agency (EPA) issued an advisory on approximately 70 spot-on flea and tick control products due to a dramatic increase (50%) in reports of adverse events during 2008.<sup>7</sup> Reactions included skin irritation, skin burns, seizures, and death.

When I first wrote about the advisory back in 2010, there had been over 44,000 reports of adverse reactions, including 600 deaths. In March 2010, the EPA published the results of a year-long study of spot-on products. Their findings included the following:

- Most adverse reactions were seen in dogs weighing between 10 and 20 pounds.
- Reactions in mixed breed dogs were most commonly reported, however, the Chihuahua, Shih Tzu, Miniature Poodle, Pomeranian, Dachshund, Maltese, Yorkshire Terrier and Bichon Frise seem particularly at risk.
- Products containing cyphenothrin and permethrin were especially problematic for small breed dogs.
- Most incidents occurred in dogs under three years old, likely at their first exposure to a spot-on product.
- Dosage ranges were considered to be too wide in some cases and product labeling was identified as needing a revamp in many cases.

Based on their findings, the EPA determined that spot-on product labels needed to provide clearer warnings against using treatments meant for dogs, on cats. The agency also recommended that manufacturers lower recommended dosages for some pets to prevent over-medicating.

The good news is that there are safe, nontoxic alternatives for flea and tick control for pets, and they don't come with a long list of side effects and potential toxicities, unlike virtually all forms of chemical pesticides. You can find lots of information on how to protect your cat or dog naturally here: **[Are You Choosing the Right Protection for Your Pet?](#)**

## Sources and References

[dvm360, March 29, 2024](#)

<sup>1</sup> [Mealey, K.L. et al. Journal of Veterinary Pharmacology and Therapeutics, Volume 47, Issue 3, May 2024, Pages 226-230](#)

<sup>2,3</sup> [WSU Insider, March 28, 2024](#)

<sup>4</sup> [Anderson, H. et al. PLOS Genetics, June 14, 2019](#)

<sup>5</sup> [KY3, June 13, 2019](#)

<sup>6</sup> [Pittsburgh Post-Gazette, September 28, 2013 \(Archived\)](#)

<sup>7</sup> [EPA.gov](#)

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