

# A Must for You, but Too Much Vitamin D Could Kill Your Pet

This nutrient is sometimes added by mistake to store-bought food in too large of quantities, or well-meaning pet owners add extra amounts, thinking they're helping their pet. But either way, it can lead to a very serious and potential toxicity that could kill your pet within 72 hours.

Reviewed by [Dr. Becker](#)

## STORY AT-A-GLANCE

- There are two nutrients in particular that research shows we should be concerned about in pet food. One is an excess of vitamin D; the other is insufficient thiamine (vitamin B1)
- Vitamin D has received a lot of media attention in the veterinary industry because research shows many pet diets contain either too little or too much of this critical immune hormone
- Vitamin D deficiency has been linked to many disease processes
- Vitamin D toxicosis can result from a formulation or production error in commercial pet food, or from unnecessary supplementation by misguided pet owners, and can result in a variety of nonspecific symptoms
- Thiamine is sensitive to processing and time, so pet food manufacturers compensate by adding in high amounts. However, low thiamine levels in canned and frozen pet food in particular continue to be an issue, especially if the food is more than 3 months old

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It seems every week there's another manufacturer recall of a commercial pet food or treat for contamination or potential contamination. As a result, many pet guardians are rightfully concerned about the quality of food they feed their own dog or cat.

In addition to the potential for contamination issues in processed pet food, there are concerns about the long-term health consequences so many pets suffer after years of eating a highly processed, biologically inappropriate diet.

## Pet Food-Related Nutrient Issues

When commercially available pet food causes sudden illness in a dog or cat, it typically involves either an infection from a bacterial contaminant, toxicosis (mycotoxins), or intoxication, typically from excessive amounts of vitamin D.

However, processed pet food-related nutrient deficiencies do occur, including thiamine deficiencies. In the case of vitamin D, the problem is "too much of a good thing." When it comes to thiamine (vitamin B1), the opposite is true.

## Vitamin D Toxicosis (Hypervitaminosis D)

Vitamin D is a fat-soluble vitamin. Your pet's body absorbs it in the same way dietary fats are absorbed, and excess amounts are stored in the liver.

According to Dr. Cailin Heinze, a Tufts University board-certified veterinary nutritionist, "Excessive vitamin D is typically introduced into commercial foods by formulation or production error."<sup>1</sup> And unfortunately these errors have happened repeatedly, as demonstrated by a number of pet food recalls.

Dogs and cats can also ingest too much of this nutrient when well-intentioned owners supplement diets with sufficient amounts of D with even more, in the form of tablet, pill or liquid D supplements or multivitamins containing vitamin D.

Other avenues of intoxication not pet food-related include the ingestion of rodent bait and commercial skin creams containing high levels of vitamin D.

## Symptoms of Vitamin D Toxicity

Symptoms of toxicity can include:

- Excessive drooling
- Abdominal pain
- Vomiting (sometimes with blood)
- Dark tarry feces
- Loss of appetite
- Weight loss
- Increased thirst and urination
- Constipation
- Weakness
- Muscle tremors
- Depression
- Seizures

Vitamin D toxicity is a very serious and life-threatening emergency that requires immediate veterinary intervention. After accidental ingestion of a compound containing vitamin D, the first 72 hours are crucial in saving the animal's life.

## Preventing Hypervitaminosis D in Your Pet

Most commercial pet food formulas contain at least the Association of American Feed Control Officials (AAFCO) minimum recommended amount of vitamin D, through amounts found in pet food ingredients plus the addition of a vitamin D supplement.

There has been some controversy over how well synthetic vitamin D is absorbed and utilized by the body, as well as how the body reacts and responds to synthetic nutrients, in general.

But for pet food to be labeled as nutritionally complete and balanced, most manufacturers add a synthetic form of vitamin D.

If you prepare a homemade diet, food sources of vitamin D include halibut, salmon and other fish, cod liver oil (also high in vitamin A), cheese, yogurt or kefir, liver, and free-range eggs.

But contrary to popular belief, none of these food sources contain enough D to meet minimum nutrient requirements for most carnivores.

In addition, dogs and cats can't derive adequate levels of D from exposure to sunshine, unlike some other mammals. Because it can be challenging to meet optimal vitamin D levels for immune health, supplementation may be unavoidable in a D-deficient diet (which most homemade diets are).

Additional vitamin D supplementation above and beyond feeding a balanced diet is not recommended, unless blood tests show your pet is deficient.

So to summarize this confusing topic, commercial diets can run the risk of containing excessive levels of D, and if you feed a commercial diet you should be familiar with the symptoms of toxicosis.

Homemade diets run the risk of D levels being too low, and each animal's ability to absorb and utilize the vitamin D in any diet is variable. If you want to make sure your pet has optimal levels of this important hormone-vitamin, ask your veterinarian to check blood levels at your next visit.

## **Thiamine Deficiency**

Thiamine, or vitamin B1, is a water-soluble vitamin absorbed from the diet through the small intestine, and is necessary for normal carbohydrate metabolism. Organs that use a lot of energy, like the brain, can be severely compromised by a thiamine deficiency.

A lack of thiamine can also lead to a buildup of lactate, resulting in acidosis. Unlike many other nutrients in processed pet food, thiamine levels present some unique challenges, with the result that thiamine-deficient pet foods are an ongoing issue.

This is especially true, according to Heinze, for canned cat diets, in particular those labeled for intermittent and supplemental feeding only (unbalanced diets). And since cats require about three times the amount of dietary thiamine that dogs do, kitties are at significantly higher risk for developing a deficiency.

## **Insufficient Thiamine Levels in Pet Food**

Thiamine is very sensitive to heat and time, and processed pet foods are manufactured at extremely high temperatures and are designed to sit for months on a shelf or in a freezer.

A thiamine deficiency can also develop from feeding pets large amounts of raw fish containing the enzyme thiaminase, which destroys thiamine, and also from feeding pet food containing sulfites, which inactivate thiamine. To compensate, manufacturers add in high amounts of thiamine to their formulas prior to processing, however, according to Heinze, it's possible that around 15% of canned cat foods still contain inappropriately low amounts of thiamine.

Pets fed high-carbohydrate foods may experience deficiencies because their bodies have a greater demand for thiamine to metabolize all those carbs. In addition, animals with intestinal disease that interferes with nutrient absorption may be thiamine-deficient, as well as pets taking certain medications like diuretics.

## Symptoms of a Thiamine Deficiency

Progressive symptoms of a thiamine deficiency can take weeks to develop, but initial signs of general gastrointestinal upset including vomiting, excessive salivation, loss of appetite, and weight loss, often occur within a week after an animal begins eating a diet severely lacking in thiamine.

If the deficiency remains untreated, neurological signs will follow. Typically, a pet should be thiamine deficient for around a month before the terminal stage is reached. Once an animal has entered this stage, he or she will die within a few days if the deficiency is not immediately reversed.

Diagnosing thiamine deficiency can be complicated, because it exists in several forms in an animal's body and measuring the concentrations can be a challenge. Most often a thiamine deficiency is diagnosed based on the animal's symptoms, dietary history, and response to treatment.

## How to Insure Your Dog or Cat Is Getting Enough Thiamine

Treating a thiamine deficiency involves feeding a balanced, species-appropriate diet that has been analyzed to verify it meets thiamine requirements, and limiting or eliminating raw fish. If you want to feed your pet fish occasionally, consider sardines packed in water or wild caught, gently cooked salmon.

Often thiamine is given by injection for three to five days, followed by oral supplementation for two to four weeks.

If you're feeding a variety of high-quality, human grade commercial pet foods (preferably a balanced raw diet), you may not need to add more thiamine, especially if you buy small packages and use the food up in 60 days or less.

Discuss both of these nutrients (vitamin D and thiamine) with your holistic veterinarian or pet nutritionist to make sure you are providing optimal amounts in the foods you are feeding your animals.

## Sources and References

<sup>1</sup> [Clinician's Brief, December 2014](#)

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