

## Does Your Pet's Food Contain This Toxic Synthetic Vitamin?

Dr. Becker talks with Dr. Tom Cameron, a whole food nutrient expert, about synthetic vs. whole food vitamins and in particular, synthetic vitamin K, also called menadione.

Analysis by [Dr. Karen Shaw Becker](#)

[Download Interview Transcript](#) | [Download my FREE Podcast](#)

### STORY AT-A-GLANCE

- Menadione, which is a synthetic form of vitamin K, is a widely used ingredient in pet food
- Not only does menadione lack many of the important properties of natural vitamin K (derived from whole foods), it has also been identified as a liver toxin
- Even in very small amounts, ingestion of menadione on a daily basis over a dog's or cat's lifetime is cause for concern
- Menadione can be found in all types of pet food, including commercial raw diets, so it's important for pet guardians to check labels carefully for the presence of this synthetic nutrient

***Editor's Note: This article is a reprint. It was originally published March 08, 2015.***

Today I'm interviewing a very special guest, Dr. Tom Cameron. Dr. Cameron runs the DeForest Veterinary Clinic in DeForest, Wisconsin, where he offers a combination of traditional and holistic treatment modalities. He also serves in a technical support role to the Standard Process line of veterinary nutritional supplements.

Standard Process is one of my very favorite whole food supplement companies, and I asked Dr. Cameron if he could join us today to talk about a questionable pet food ingredient called menadione.

### Menadione, or Synthetic Vitamin K, Is a Widely Used Ingredient in Pet Food

Menadione is one of those mystery ingredients you may have noticed if you read pet food labels. Dr. Cameron explains that menadione is a vitamin K analog — a synthetic version of vitamin K. Many people know that vitamin K comes from certain foods, for example, green leafy vegetables and liver. Vitamin K is an important factor in blood clotting. It also drives minerals to certain organs of the body like the teeth and bones, to help them heal and to support connective tissue.

Menadione is called vitamin K3, which is a synthetic version of vitamin K that is widely used in pet foods, presumably to replace naturally-occurring vitamin K.

There's a great deal of controversy and growing concern around the use of menadione in pet food, and also some human foods. As with many questionable ingredients in the food supply, there is an ongoing debate over whether or not menadione is safe. The concern in the holistic community is primarily about the long-term effects of menadione. The holistic perspective, of course, is that it's much healthier and safer to get nutrients, especially vitamins and minerals, from food rather than supplements.

## **Menadione Is Toxic to the Liver and Other Organs**

Menadione is a synthetic analog, which means it's man-made. Natural vitamin K is a fat-soluble vitamin that is absorbed through fat metabolism. Menadione is a water-soluble form of vitamin K that works very differently. It is presumably absorbed by bacteria in the gut and converted to forms of vitamin K the body can use.

There are very significant limitations to menadione vs. natural vitamin K. For example, it doesn't support blood clotting. So there are important properties of natural vitamin K that synthetic vitamin K lacks.

Another significant and growing concern about menadione is that it may cause liver toxicity. According to Dr. Cameron, there are many references that classify menadione as a toxin. There are studies from other countries that show that menadione causes toxicity to liver cells and red blood cells. There are material safety data sheets (MSDS) that list menadione as a substance that is toxic to the liver, kidneys, lungs, mucous membranes, and other tissues. Obviously, it's a concern when a toxin is being added to foods that pets are eating every day.

## **Why Pet Food Manufacturers Use Menadione**

Defenders of the use of menadione in pet food say that it's inexpensive and stable. Those are the two main reasons given for using menadione so extensively in pet food. Other manufacturers claim they're using menadione at very low levels. Another argument is that it has been used in livestock and poultry feeds for years, and hasn't caused any problems.

But as Dr. Cameron explains, the difference is that most dogs and cats eat processed pet food their entire lives — sometimes 13, 14, 15 years or longer. He's very uncomfortable with even a small amount of a toxic substance given over a long period of time. In veterinary practice, we see many different conditions related to the liver, and we need to be concerned that even tiny amounts of toxins given over a long period of time might cause or contribute to the diseases we see.

I asked Dr. Cameron why, if there are safety concerns with menadione, pet food companies are using it rather than natural food-based forms of vitamin K. He believes it's because it's much cheaper to make synthetic vitamin K3 in a laboratory. Cost is a primary driver in pet food manufacturing. The other reason is that menadione is very stable. Unlike natural vitamins, it isn't affected by heat, sunlight, storage, dehydration or other factors.

Using whole food ingredients in pet food in a way that keeps them stable is a more involved process. Plus whole food ingredients tend to be more expensive.

## **Types of Pet Foods Containing Menadione**

Dr. Cameron has found synthetic vitamin K in every type of pet food — canned, dry, raw — all of them. But its use is especially prevalent in dry and canned foods. AAFCO has determined that menadione should be the recommended vitamin K supplement added to pet foods, so the majority of manufacturers use it.

As a proponent of raw diets, I was shocked to discover menadione is used in some commercial raw pet foods. Most people who advocate raw diets are proponents of whole food ingredients because they understand that consuming food in its natural form and freshly prepared is optimally healthy. Finding it in raw diets tells me that some companies aren't investigating the ingredients they use. They're placing their trust in their formulators without actually evaluating each individual ingredient in their food, which concerns me.

So for all of you out there who haven't read the fine print on your pet food label — even if you're buying an excellent quality raw pet diet — make sure to examine the list of vitamins and minerals closely. If you see menadione or vitamin K3 on the list, you know the food contains a potentially toxic ingredient.

## **How Whole Food Nutrients Differ From Synthetic Nutrients**

Dr. Cameron is a whole food nutrient specialist, which is another reason I wanted to talk to him today. Standard Process has built its reputation on whole food nutrition. I asked Dr. Cameron to talk about what happens in our bodies when we replace natural food-derived nutrients with synthetic nutrients.

He explained that our bodies and those of our pets have evolved over millions of years eating whole foods. In other words, animal bodies (including ours) are designed to process nutrients from whole food. There are very specific receptors in the body designed to make perfect use of the nutrients contained in real food.

But when we start breaking whole foods apart to reproduce their nutrients in the laboratory, we run into lots of limitations. When a synthetic nutrient is created in a lab, the finished product has a different structure from the natural form of the nutrient. The man-made nutrient doesn't fit well into the receptor in the body that is designed for it.

The result is that not all components of the synthetic nutrient can be used by the body. It's therefore less efficient, it doesn't have the same metabolic effect as the real thing, and our bodies must process the unusable portion as a xenobiotic (waste) product. It takes energy to get rid of the waste, which is a drain on the body's resources.

## **The Value of Long-Term Use of Synthetic Vitamins Has Been Overstated**

Dr. Cameron says there are human studies that show long-term use of synthetic vitamins does not have the health benefits we expect. Menadione is an excellent example of a synthetic vitamin that is represented as vitamin K, but without many of the important benefits of whole food vitamin K. There are actually five derivatives of vitamin K — K1 and K2 are the ones that seem to be of most benefit in the body. Whole food tends to have all the forms of vitamins rather than just one. When a nutrient is fractioned and separated from all the other ingredients that create synergy and work together with it, the therapeutic activity of the nutrient is lost.

When it comes to synthetic vitamin K in pet food, manufacturers have done a good job of convincing consumers of its value. Also, we're accustomed to reading the top half of pet food ingredient labels, but not the bottom half that contains the vitamins and minerals. Not only are those ingredients confusing and impossible to pronounce for most

people, but there's also no way to know where they've been sourced from.

## **Thank You, Dr. Tom Cameron!**

I really appreciate Dr. Cameron taking time to talk to us today about the synthetic vitamins — and synthetic vitamin K in particular — that may be lurking in commercial pet food.

And I want to encourage all of you who feed a commercial diet to your pets to check the bag, can or container for the presence of menadione. For more information on menadione, **Dog Food Advisor** has an excellent article on the subject.

---