

Menadione in Pet Food:

A Special Interview with Dr. Tom Cameron

By Dr. Karen Becker

KB: Dr. Karen Becker

TC: Dr. Tom Cameron

KB: Hi, I'm Dr. Karen Becker. Today, I have a very special guest, Dr. Tom Cameron, from Standard Process, one of my favorite supplement companies in the world. They do whole food supplements, one of the only whole food supplement [companies] in the world. I'm going to have the pleasure of speaking with Dr. Cameron today about a questionable pet food ingredient called menadione. Thank you, Dr. Cameron, for joining me.

TC: Karen, thanks for having me. I'm glad to be here.

KB: Wonderful. Can you tell me, our listeners, viewers, and readers a little bit more about what menadione is? It's something that when you flip over dog and cat foods, it's an ingredient that's listed and not too many people know what it is. Can you enlighten us?

TC: Sure. Menadione is a vitamin K. We can call it a vitamin K analog. It's a synthetic version of vitamin K. Now, a lot of people are familiar with vitamin K that is very available in the natural food form. We get it in leafy vegetables, particularly green vegetables. We also get it in liver. Vitamin K is very important for clotting, helping your body to form clotting factors. But another part of vitamin K is it's very important for using minerals and driving minerals to teeth and bone, to help healing, and to keep connective tissues healthy there.

Menadione is called vitamin K3. That is the synthetic version of vitamin K that is used in a pretty widespread manner in pet foods with the idea of replacing natural forms of vitamin K.

KB: What do we know about the safety of synthetic vitamin K? Or what does the research tell us about it?

TC: Well, there's a lot of controversy about the use of menadione in human and in pets, and there's growing concern about it. But as with many ingredients in the food supply, there are debates over, "Is it safe or is it not safe?" But the concern, especially from most of us on the holistic side, is the long-term effects of menadione. First of all, the very basic approach from a holistic, and from what we consider a very realistic point of view, is that it's much healthier, much safer, and better to get our nutrients, especially vitamins and minerals, from food.

Menadione is a synthetic analog. It is a water-soluble form of vitamin K. Vitamin K is naturally known as a fat-soluble vitamin. Our body has always absorbed vitamin K through our fat metabolism and with fatty foods and things like that. This is a very different approach to vitamin K. It works very differently. The idea is that the synthetic vitamin K is supposed to be absorbed by the bacteria in the gut and then transformed into the usable forms of vitamin K in the body.

There are very significant limitations to the menadione, in that it doesn't have any anti-clotting support in the body. It doesn't perform that function of vitamin K. Right there, there's a limitation of using synthetic vitamins over food-based vitamins. It's that we don't get the benefit of clotting. There's a very significant difference between the food-based vitamin and the synthetic.

The other growing concern is that menadione is the very suspect in causing liver toxicity. There are many different references that classify menadione as a toxin. There are studies from overseas that have shown toxicity to liver cells and red blood cells. I have material safety data sheets (MSDS) talking about menadione as an ingredient. Right here, it says that the substance is toxic to liver, kidney, lungs, mucous membranes, and other tissues.

KB: Wow.

TC: These are concerns. We're putting these into a food ingredient that we're taking every day.

KB: You bet.

TC: Some of the people who justify the use of menadione, [they say:] 1) it's inexpensive and 2) it's stable. Those are the two main reasons that they use menadione very extensively in pet food. But the other supporters of menadione say, "We're using it at very, very low levels. This is supported by the fact that it has been used in livestock and poultry feeds for many, many years." And they say that it has not caused any problems. The difference is that we give pet food to our pets for long term, sometimes for 13, 14, and 15 years, and longer.

I am very uncomfortable with even small amount of toxic substance that we give over a long period of time. In our practices, we see so many different conditions and problems with the liver and other diseases, that anything that's going to be causing even a small problem can cumulatively cause problem for long term.

KB: Sure. And that makes total sense. The big question is, if there could be some safety concerns, and we have natural food-based forms of vitamin K that we could be using, why would pet food companies pick a risky ingredient? What's behind using something that could be potentially toxic long term?

TC: Well, the first issue is that it is inexpensive. It's much cheaper to make the menadione or vitamin K3 in a laboratory situation and the ingredients used to make it are very inexpensive. That is going to be a primary driver with pet food. The other is that it's very stable. Vitamin K cannot be affected by heat, sunlight, storage, dehydration, and things like that. It's going to be more of an involved process to put whole food ingredients in a pet food in a way that keeps them stable. Whole food ingredients tend to be more expensive.

KB: Sure.

TC: Although they provide so much more than just vitamin K, that's the primary reason that it's used commercially.

KB: Can you give us some idea of what types of pet foods... I know you mentioned large animal feeds, of course, but is menadione used just in dry food? From my reading of labels, I know the answer to this. But help our audience understand kind of the depth and breadth of this particular risky ingredient in all types of pet foods – canned foods, dry foods, raw foods, and all of them.

TC: I found it in every place, pretty much every place I have looked. There are some food companies that do not use menadione. But otherwise, it's an incredibly widespread use of the product in primarily dry foods and canned foods.

KB: Yeah.

TC: The Association of American Feed Control (AAFCO) has determined that menadione is the vitamin K recommended supplement for addition to foods. Most food companies do use that when they're putting in a vitamin K supplement.

KB: [For] me being a proponent of raw foods, it's shocking. Most of the time, people who advocate raw food are proponents of whole food diets because we understand that consuming foods in its natural form and freshly prepared would be best for the body. But it's interesting, because even some raw foods that are used in AAFCO premixes, sadly, they're adding the potential toxic ingredient into some raw foods, which is shocking. All that tells me is that those companies aren't necessarily investigating. They're trusting whoever is formulating for them, but they're not actually evaluating each individual ingredient for a potential toxicosis, which is concerning.

I do think it's found in all types of food. Regardless if you think you're feeding a great-quality food, you still need to review the lower half of that label with all those vitamins and minerals that have been added in, because I think a lot of people are not even aware of what menadione is. It's a little concerning that even great quality foods are using this potential ingredient.

Part of the reason I asked you to come and talk to me is I really view you as kind of whole food nutrient specialist. Standard Process has built its reputation on whole food nutrition. Talk to me a little bit about why... I mean, it seems like common sense, why whole food nutrients would be a better choice rather than lab-created synthetic nutrients. But tell our readers a little bit about what can happen when we replace natural food-derived nutrients with synthetic nutrients. What happens in the body?

TC: That's a great question. There are a couple of ways to answer it. The first is that our bodies and our animals' bodies have evolved over millions of years eating these whole foods. They're adapted to getting these nutrients out of whole food. When we break foods apart and try to take individual nutrients out of them, and then try to... We think we can make them, as well as that we can grow them, or that they were made naturally. There are lots of limitations to that.

When we make something... Well, in the body, when the body uses a nutrient, there are very specific receptors or keyholes in the body that these nutrients fit into. If you can imagine, they fit right like my hand. My left hand fits in perfectly into this receptor. When you make synthetic vitamins or synthetic nutrients in the laboratory, you end up with different rotations or different structures of that vitamin. Some look like my left hand, some look like my right hand, and some can be in between where it's my right hand with two fingers instead of three. That is not going to fit into that very specific receptor for my left hand.

What that means is that not all of this synthetic vitamin is going to be used by the body. It's less efficient, it doesn't have a lot of the same metabolic effects, and it can be a drain on the body because now we've got excess that has to be treated as what we call a xenobiotic or a waste product. It takes energy to get rid of that.

There are long-term studies of large numbers of humans that have shown that long-term use of synthetic vitamins have not had the health benefits that we thought. Menadione is an excellent example to show that it's being portrayed as vitamin K, but it doesn't do many of the things that whole food vitamin K does. With vitamin K, we've been able to isolate different fractions of it. There are actually five fractions of vitamin K. K1 and K2 are the primary ones that we know of and that seems to do most in the body.

But foods tend to have all the forms in them. They don't have just one. When we take one out of its full form and we don't have it with all other ingredients that are very synergistic and work together with them, we lose therapeutic activity.

KB: Sure. It also just seems like common sense that deriving nutrition from whole foods would be for our body's best interest and that when we're nourishing our pets, we would make those selections. And yet, oftentimes, pet food manufacturers have done a pretty good job of convincing pet parents. We are trained to read the first half of the label, which is the meat products, the vegetable products, and what the whole raw materials are. But the second half of that nutrient panel when it comes to the vitamins and minerals, not only is it very confusing and most people can have a hard time pronouncing some of the nutrients, but it also is difficult to know where they're sourced from.

I appreciate you taking the time today to help enlighten our listeners and viewers about some of these potential synthetic risky vitamins that could be lurking in their pet food. I'm going to encourage everyone who's feeding a commercial diet to flip the bag, can, or container over and evaluate if menadione is in fact in their food. You provided some great discussion on maybe how to make better choices using whole food nutrient. I appreciate your expertise. Thank you, Dr. Cameron.

TC: Thank you, Karen. I appreciate the work you're doing.

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