

High Heat Processing Creates Higher Levels of AGEs

It's indisputable. Studies find that processed dry and canned pet diets contain advanced glycation end products (AGEs). Dietary AGEs can be a factor in the development or worsening of many degenerative diseases.

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

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

STORY AT-A-GLANCE

- Welcome to day 2 of our Companion Animal Nutrition and Wellness Institute's (CANWI) Annual Awareness Week
- CANWI is a nonprofit I co-founded with Dr. Donna Raditic; our mission is to conduct independent, unbiased pet food research and share our findings with every interested pet parent, veterinarian and pet food company
- Today, Dr. Raditic and I provide an update on the exciting study CANWI is conducting on blood and urine levels of advanced glycation end products (AGEs) in dogs eating processed versus fresh diets
- We also discuss our plans to launch a study of AGEs and cats, and how dietary AGEs may be linked to feline diabetes similar to human diabetes

Editor's Note: This article is a reprint. It was originally published October 29, 2018.

Not long ago, the Companion Animal Nutrition & Wellness Institute (CANWI) launched an ambitious research project to compare processed pet foods with fresh pet diets. Joining me again today is CANWI co-founder and board-certified veterinary nutritionist Dr. Donna Raditic. I asked Dr. Raditic to explain a little bit about the study and why it's so important.

"We're actually looking at the effects of processing on pet diets," Dr. Raditic explains. "There's a reaction that occurs when proteins and carbohydrates are [heat-processed.] The ingredients caramelize and stick together. This can be a good thing, for example, when we make toast and get that brown crust that's so tasty.

But what we've also learned, and this has been reported in the literature, is that when proteins and carbs come together, they can form advanced glycation end products, or AGEs. Dietary AGEs may be one of the underlying causes of certain disease states in humans, for example, diabetes.

In fact, diabetics who measure their A1C levels are actually measuring the hemoglobin in red blood cells that has carbohydrates stuck to proteins. So we started wondering about AGEs in dogs and cats."

How Do AGEs in Processed Pet Food Affect Dogs and Cats?

Most dogs and cats today eat commercial diets containing proteins and carbs that have been heat-processed. There have been studies that suggest pets may consume up to 100 times more AGEs on a per weight basis than humans eating a conventional Western diet.

So at CANWI we began wondering if we could measure the level of AGEs in different types of pet diets to see how they compare. For example, what are the levels of AGEs in dry food versus canned food versus fresh or raw diets? And we also wondered if we could measure the effect of AGEs in pets' blood and urine, because we know it's been done with rodents, and also humans. We asked ourselves, "Do AGEs affect the way a dog metabolizes or utilizes proteins and carbohydrates?"

"Maybe AGEs affect the gut microbiome," Dr. Raditic points out, "and the healthy bugs in our dogs' guts. We know a healthy gut microbiome is essential for overall health."

These are some of the questions we wanted to try to answer at CANWI, so the next step was to design a study, which ultimately took about two years. As we designed our study, we contacted researchers, scientists and laboratories interested in the effects of processed foods and AGEs on the gut microbiome.

Through this process, we found very sophisticated labs that can measure AGEs in a variety of different pet diets, as well as in blood and urine samples. They're also able to evaluate how the presence of AGEs may impact the way a dog metabolizes and utilizes proteins and carbohydrates by analyzing specific compounds in urine and blood samples.

In addition, they are able to look at the effect AGEs may have on a healthy gut microbiome. So after a great deal of collaboration with various labs and scientists, we were able to launch a project to answer some of these very important questions.

Processed Dry and Canned Dog Food Have Higher Levels of AGEs

Dr. Raditic and I are very excited about this project because no one else in the world is doing this research. Ultimately, we want to be able to answer doubters and critics of fresh food diets who are skeptical because there's little to no research available.

Our research is also the first of its kind to compare different types of pet diets, including canned, dry, raw and fresh, to measure the presence and levels of advanced glycation end products. The tests we needed weren't available, so Dr. Raditic and her team had to ensure the tests were validated.

It's an intense process that requires time and money. Fortunately, we were able to fund the first part of the study last year, and since then, we've had some important breakthroughs. We can now measure the level of AGEs in pet food, as well as in blood and urine samples.

"Standardizing those tests was key," Dr. Raditic explains, "making sure that every time we do it, we're doing it correctly and in the same way, and we're getting repeatable results. We needed good markers to design good tests, and now we have good tests and that will give us accurate results that have been standardized."

What have we found so far? We've found the more heat involved in processing, for example in dry and canned pet diets, indeed, there are higher levels of AGEs compared to fresh and raw diets."

CANWI Will Show Evidence on the Benefits of Fresh Dog Food

The next step in the process involves statistical analysis of the data CANWI has collected, followed by publication. In addition, we're feeding groups of dogs diets with varying levels of AGEs, and we're beginning to evaluate blood samples.

"If they're eating high levels of AGEs, do their levels go up immediately," asks Dr. Raditic. "Or does it take time for the levels to rise? How do high levels of AGEs affect the way the dogs utilize the nutrients in their diet? Do we see changes in compounds in their urine?"

We have a lab looking at that information. And the microbiome lab is looking at potential relationships between AGEs levels and changes in the dogs' gut microbiomes. There's an incredible amount of data being gathered and processed from our study.

"It's amazing to think that we've actually done this," says Dr. Raditic. "It started out as just an idea. It started out with you and I saying, 'We know nutrition makes a difference. We've seen it. We've taken dogs with diseases and made them better by improving their diet."

You can say it, and I can say it, but in order to make it a fact that can be applied to pets across the board, we need research. We need research so our findings can be applied to not just a few dogs and cats in our practices, but to all dogs and cats. Our research findings are going to help pet parents. They're going to help the pet food industry produce better diets. They're going to give us better information on what the best nutrition really is for dogs and cats. That's so exciting!"

If you know and understand the power of nutrition in your own life, or if you've improved your dog or cat's nutrition, you know in your heart your pet feels and looks better, and seems healthier. But anecdotal evidence from our individual experiences doesn't translate into better food science being taught in veterinary schools, for instance.

To make the kind of research impact necessary for veterinary students to be taught about whole food nutrition, studies like CANWI's are imperative, and we're the only organization doing them. We undertook a massive research study right out of the gate, and I personally believe our findings will cause a positive shift in veterinary nutrition.

What About AGEs in Cat Food?

So we've got a lot going on right now, primarily with dogs, but don't despair, all you cat people out there, because our next project will focus on felines! A few months ago I called Dr. Raditic and said, "So, what do you think about a kitty study?" She said, "I think it's a fantastic idea, but it's going to cost more money." Dr. Raditic then consulted her team of scientists and university researchers. I asked her to talk about that.

"After you and I had our conversation about cats," she replied, "I sat down with the research team and discovered that some of them are cat-crazy just like we are. I asked them if we could do an AGEs study with kitties. It turns out the lab that's measuring AGEs in dog urine and blood samples feels very confident they can do the same for cats."

We did some digging to look for any new information that has come out in human research since we began our canine AGEs study, and we found something very interesting. Over the last couple of years, a link has been established between high-AGE diets and Type 2 diabetes in people. In fact, it's been shown that in some diabetics, a change from a high-AGE diets to a low-AGE diets effectively cures their disease.

"They don't have to take insulin or diabetic medications," says Dr. Raditic. "Their diabetes is controlled entirely through diet. And we know that with some diabetic cats, a change in diet cures their disease. So with these new human findings in mind, we thought we should study AGEs and diabetes in cats."

So we're hoping to secure funding to expand our AGEs study to evaluate cat diets, and also to compare levels of AGEs in healthy cats and those with feline diabetes to see what connections we can find.

CANWI: The Only Org Doing Independent Pet Nutrition Studies

Dr. Raditic and I will be talking in more detail later in the week specifically about cats. Today's goal was to update everyone on our AGEs in dog food study, and to let you know that we need your help to fund the cat study we're planning. Cats, in general, don't get enough attention from the research community and we'd like to see that change.

I also want to remind our listeners and readers that CANWI is the first organization in the world to look at some of the factors involved in pets' overall well-being and long-term health as they relate to nutrition. We're taking a full week to highlight and discuss a range of issues, and hopefully inspire you to get involved with the work CANWI is doing.

Not only will our study findings help us feed our pets better, they'll also provide much-needed information to veterinary institutions, nutritionists and general practitioners so they can make better recommendations when it comes to dog and cat nutrition.

"It's an exciting time," adds Dr. Raditic. "It's an exciting opportunity to support this type of research. We're accumulating data now on our dog study, and it's being analyzed. We're hoping to get some publications out this coming spring. CANWI is going to bring this information to every pet parent, every veterinarian, every person and organization that needs it."

Now that we're about to include cats, we're going to learn and discover even more. One thing is for certain: When I know something and you know something, Karen, we're going to make sure everybody knows. We're going to learn what the best nutrition is and how we can improve the quality and longevity of our furry loved ones."

Dr. Raditic and I invite you to join us in supporting this important work with a donation to CANWI. We can't do it without you. Thank you!
