

How Kibble and Canned Food Affect Your Pet's Health

Heat promotes interactions between sugars and proteins in foods, and the higher the heat used to process the food, the higher the levels of dietary AGEs. Find out what happens when your dog or cat consumes AGEs from the two highest heat ultraprocesed foods - kibble and canned food.

Analysis by Dr. Karen Shaw Becker

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

STORY AT-A-GLANCE

- CANWI is a nonprofit organization I co-founded with Dr. Karen Becker; our mission is to conduct independent, unbiased pet food research and share our findings with every interested pet parent, veterinary school, and pet food company
- Today's guest is Dr. Joe Bartges, professor of internal medicine, interventional radiology and nutrition at the University of Georgia's College of Veterinary Medicine
- Our discussion is around commercial pet food and advanced glycation end products (AGEs), and their effect on dogs and cats
- We also discuss how our collaborative research will be made available to pet parents, veterinarians, other interested parties, and hopefully serve as motivation for the processed pet food industry

Editor's Note: This article is a reprint. It was originally published August 04, 2021.

Welcome to day 4 of the 2021 **Companion Animal Nutrition and Wellness Institute** (CANWI) awareness week, during which we'll be focusing on commercial pet food.

Today I'm interviewing veterinarian Dr. Joe Bartges of the College of Veterinary Medicine at the University of Georgia. Dr. Bartges and I are going to discuss commercial pet foods today, but first I asked him to tell us a little about himself.

"I am from West Virginia, originally," Dr. Bartges replies. "I'm a graduate of Marshall University. I did my veterinary training at the University of Georgia. I completed my internship and two residencies, one in internal medicine and one in nutrition, with a Ph.D., and did a post-doc at the University of Minnesota.

I've been on faculty at the University of Georgia and Tennessee, and I was in private practice in Connecticut at a practice that Cornell University runs. I also had a position at Cornell. I've been back at the University of Georgia since 2016. Currently, I am a professor of internal medicine, interventional radiology and nutrition here at Georgia."

Below are some of the highlights of our discussion, which you can view in its entirety in the video above, or by reviewing the downloadable transcript linked above.

The Role of Processing on AGEs in Pet Food

One member of Dr. Bartges' team at the university, a doctoral student, is publishing her doctoral thesis, which is a study of advanced glycation end products (AGEs) in dog food and its effect on dogs. I asked him to tell us about this exciting research.

"It's the first of likely four or five publications," Dr. Bartges explains. "So, this is just the beginning publication of her dissertation research evaluating the role of processing of dog food on several things. We looked specifically at four different diets that were similar in composition but processed in different ways.

One was a high heat processed dry food kibble, a heat processed canned food, an air-dried food, and a minimally processed raw food (a process was used to eliminate pathogenic bacteria). The kibble and canned foods are considered ultraprocessed. Our goal was to evaluate the role of processing on the amount of AGEs in the foods.

Just to clarify, advanced glycation end products are compounds that occur due to the interaction of sugars with proteins and fats in the diet and in the body. In human food processing, heat promotes those interactions.

We wanted to find out if the same thing occurs with pet food, and the answer is yes. The more processed the foods, the higher the dietary AGEs levels. We also learned that the dogs fed high heat ultraprocessed foods had higher AGE levels in their blood and urine.

We also wanted to know if AGEs influence metabolism. We did something called metabolomics, which looks at the end product of many metabolic pathways in the body, as well as changes in the bacteria in the gut, or microbiome.

What we found, which is information that will be available in subsequent publications, is that processing and AGEs 1) influence how the gut responds to food, 2) cause changes in gut bacteria, and 3) effect metabolism."

AGEs Research May One Day Help Prevent Disease in Pets

Next, I asked Dr. Bartges where he thinks research into AGEs in pet food and the effect on pets should go next. He answered that there are lots of different areas that need to be explored, by a number of different experts and groups.

He's collaborating with not only CANWI, but also with people at the University's Complex Carbohydrate Research Center, and metabolomics and microbiome researchers. Dr. Bartges' team will also be collaborating with Dr. David Turner, who I interviewed earlier.

"It's a group effort, because there's a lot to be learned from this, and it has a lot of ramifications," says Dr. Bartges. "Our plan moving forward is to look at the role of dietary AGEs, and therefore, body AGEs, in dogs and cats, and their potential influence on diseases like chronic kidney disease, diabetes mellitus, and osteoarthritis.

If they are playing a role in disease, and we know they do in humans, there may be things that we can do as veterinarians, as pet owners, and within the pet food industry to lower AGEs levels to help pets have a better quality and quantity of life.

If AGEs are shown to be involved in diseases in dogs and cats — and we expect they will be — it could allow us to take a more proactive approach to help prevent those diseases from developing. I know Dr. Turner has mentioned that metabolically speaking, on average, dogs may be ingesting up to 150 times more, and cats up to 50 times more AGEs from processed diets than a human does.

Most people don't eat processed foods at every meal, every day, but most dogs and cats, once weaned, start eating ultraprocessed dry or canned food at every meal, every day of their lives. This means they're ingesting up to 100+ times the amount of AGEs on a metabolic body weight basis as an adult human for their whole lives.

Many of the diseases dogs and cats develop are very similar to the diseases humans acquire, such as diabetes, arthritis, inflammatory bowel disease (IBD), inflammatory skin disease, heart disease, cognition disorders, and others. It's important to take a step back and ask, 'What role does pet food play in this?' And can it be improved to prevent disease?"

Looking Ahead to Other Important Research Projects

Dr. Bartges' team is looking at AGEs in cats with diabetes and has submitted a grant request to a foundation for cats hoping to secure funding to look at the role of AGEs in other feline diseases, including chronic kidney disease.

They also plan to do more studies in both dogs and cats to look at the effect of AGEs over a lifetime and its role in obesity, cancer, skin diseases, and other conditions.

"It's limitless as to where this can go," Dr. Bartges says, "but it's only possible through the support of foundations and even more importantly, people who donate to the foundations. Pet food companies have deep pockets and do research, but they don't always publish it.

They use it to develop products, so we don't have access to that information. But when research is funded by non-industry organizations, the results can be made available to everyone. Our studies won't be "owned" by anyone — they'll be available for everyone to review, not only researchers and veterinarians, but also pet owners."

I'm very thankful that Dr. Bartges was able to join us today to talk about our growing team of collaborators and the high level of unbiased research being done. Our CANWI mission is to provide information so that pet parents and veterinarians can make the best decisions about what to feed their animal companions.

But I also hope we're able to motivate the pet food industry to think about producing better diets, given that the standard right now in dry and canned foods is not the gold standard. We all need to do better, and we can.

"I would say the pet food industry has done great things," says Dr. Bartges. "Before they came along, it was sort of a hodgepodge of what pets ate — some good, some bad. The pet food companies did a lot of research to find out what nutrients at what levels are needed.

They wanted to make pet food that was convenient to serve, and complete and balanced. That's what a lot of the early efforts went to, things like, 'How much calcium do cats and dogs need in their diet?' But we've moved past that point now.

Pet foods are designed to be adequate, and the question is, is adequate good enough for your dog or cat? And what can be done to be better than adequate? Because your dog or cat is not an average dog or cat. Pet food companies are forced, through regulations, to make products for the average animal.

I think some of what can come out of our AGEs research is, how can we do better than we're doing today? Ingredients matter. The processing of them matters. It isn't just the amounts of nutrients that are important, it's what happens to all the ingredients during manufacturing.

In the human food industry, there's a move toward whole ingredients and minimal processing. The pet food industry can mirror that. After all, we live in the same environment with our pets and are exposed to the same things."

Many thanks to Dr. Joe Bartges and his team for collaborating with CANWI toward our common goal of helping animal companions live longer, healthier lives.
