

## Q+A with Dr. Jennifer Larsen, DVM, PhD, DACVN

Recently, researchers with the UC Davis School of Veterinary Medicine's Nutrition Support Service took a closer look at whether commercially available (as well as a few veterinary therapeutic) vegetarian diets for cats and dogs were providing the levels of amino acids that they claimed to contain. As it happened, many of them weren't. The CCAH-funded study, which was led by clinical nutrition resident Dr. Kayo Kanakubo with support from associate professor Dr. Jennifer Larsen, also found significant problems with the way these foods were labeled. Here, Dr. Larsen briefly describes the study, its findings, and why accurate pet food labels are far less common than they should be.

**Q: Where did the idea for this study come from?**

**A:** We often have owners who prefer to feed vegetarian diets to their animals, either for health or ethical reasons. Veterinarians also use vegetarian diets for pets with specific health problems—including bladder stones, some types of liver disease, and food allergies. But we have some concerns about the nutritional adequacy of these diets. Vegetarian diets can often be poor sources of some essential nutrients, minerals, and fatty acids. Plants are also variable in the amount of protein they provide, and the amino acids they contain aren't complete, meaning that they don't meet the requirements for dogs and cats. So when you formulate a diet for a dog or a cat using vegetarian protein sources, you have to be really careful that you're doing it appropriately.

**Q: Your study had two key findings. First, you looked at the protein and amino acid composition of 24 vegetarian diets. What did you find?**

**A:** Our inclusion criteria were vegetarian diets that were marketed as being complete and balanced. We bought all that we could find, and we bought them online. Then we submitted all 24 diet samples to a contract research lab. We found that all the diets were adequate in total protein. But six of the diets did not meet the AAFCO minimum for one or more amino acid—and one diet was too low in four amino acids. Some of the diets that were below the minimum weren't just a little bit below. Some were as much as 34 percent lower than what was supposed to be there.

A lot of vegetarian pet foods list purified sources of amino acids among their ingredients, which is often something that needs to be added when you're formulating a vegetarian diet. But one of the interesting things we found was that a lot of the diets that were low in amino acids had those same amino acids listed on their ingredient list as having been added in their purified form. So either that's not really happening, or there's some error in formulation, or they're being destroyed somehow.

**Q: Why are amino acids important?**

**A:** There are several animal diseases associated with amino acid deficiencies, including dilated cardiomyopathy, which is a devastating heart disease. We also see skin disease in pets that aren't receiving the right mix of amino acids. In fact, the amino acids that we found were often low in these diets are the same ones associated with skin disease.

**Q: The study also looked at the labels on these vegetarian diets—and what you found there was a bit more surprising.**

**A:** A lot of the diets we were looking at had some problems with label compliance, meaning that the manufacturers weren't following the regulations set forth by the Association of American Feed Control Officials (AAFCO) about what needs to be disclosed in a pet food label. I should say that we find noncompliant labels on a regular basis—I have a whole collection of them. But when we noticed this problem with the vegetarian diets, we incorporated a label analysis into our study as well. And label compliance turned out to be a pretty significant problem in this category of diets.

**Q: Who decides what information must be included on a pet food label?**

**A:** There are some federal label requirements that are handled by the FDA. Beyond that, the states have their own feed control laws, which apply not just to pet food but to animal feed in general. But many states have chosen to adopt the model feed law developed by AAFCO. Enough states have adopted the AAFCO regulations that diets that are sold in multiple states essentially have to conform to AAFCO's model feed law, which requires nine different categories of information to be included on the label.

**Q: What kinds of information?**

**A:** The categories include an ingredient list, a guaranteed analysis, the brand or product name, the manufacturer name, and the species specification—is this food for a dog, for a cat, etc. There also has to be some sort of nutritional adequacy statement, which explains how, if the diet is meant to be complete and balanced, they proved that claim. The newest requirement is calorie content. But because it just came out in 2014, AAFCO recommends that enforcement of this one be delayed for 18 months for new products in development and three years for existing products. Those timelines started in January 2014.

**Q: Did you look at all nine required components?**

**A:** Yes. If we include the calorie declaration, then only three of the 24 diets we assessed were compliant. If we leave out the calorie content, then only eight of the 24 were compliant—which is not a great track record. Seven diets got the guaranteed analysis wrong, and seven had errors in their ingredient list. One had the same ingredient listed twice. Nine diets had labels with misspelled words, which was a little discouraging. Many diets didn't have feeding directions, which is another required component.

**Q: It makes you wonder if this sort of sloppiness might be a proxy for how trustworthy or how reliable a brand's claims are in general about a particular pet food.**

**A:** Exactly. Getting your label right is a pretty straightforward process; the AAFCO requirements are readily available. If a company does not have accurate or legal labels, then I don't have a lot of confidence that they can handle the many other details required to make a really healthful, wholesome, and safe pet food. It's a very complex process, and the label is probably the simplest part. Unfortunately, the enforcement of these rules at the state level is really inadequate. There's very little funding available for this, so it's a low enforcement priority. As a result, things just don't get caught.

**Q: What does this mean for consumers buying these diets? Very few people scrutinize pet food labels or, if they do, understand what they're looking at. How can they know if they're doing right by their pet with the food they're feeding them?**

**A:** It's important to know that a pet food label is not designed to give a lot of information about nutrition and quality. It's really designed as a marketing and advertising vehicle—and then they have to fit in all this legal stuff as well. If you think about a can of cat food, that's a tiny little space, and they have to fit in these nine required components in addition to their brand recognition, their logo, etc. It's a big challenge. But the bigger challenge is what the consumer has to do. Everyone wants to have a reliable way to know that what they're feeding their pet is healthful and safe. But there is a lot of misinformation on the internet—and a lot of the internet ranking lists that are out there focus on the wrong thing. A lot of them focus on the ingredient list, which frankly isn't that illuminating. Someone could have chicken meal listed on their ingredient list, and that can be a really variable product from company to company, despite there being regulations and definitions about what that means.

I think a lot of consumers don't even consider what I consider to be the most important information on the label, which is the nutritional adequacy statement. It's often in really tiny type on the back. The nutritional adequacy statement tells you for which species and life stage the diet is intended, whether the diet has a complete and balanced claim, and how the company substantiated that claim. Did they actually put the product through feeding trials or did they do a calculation method to determine that? Finally, it also tells you what kind of animal the diet is intended to be fed to. Is it for adult dogs? Is it okay for puppies? Is it okay for reproducing cats? Those are important pieces of information. But consumers don't get it from these internet ranking lists, which focus more on the fear of byproducts or whatever the current mythology is that's going around about pet foods. So consumers and veterinarians are left in this confusing state of really trying to figure out what's marketing and what's really meaningful.

**Q: What do you think could change as a result of this study?**

**A:** That will be up to the state enforcement authorities. But the onus is on the manufacturers to make sure they are producing a product that is healthy and safe. We're hoping to raise awareness for general practice veterinarians to really be cognizant of these issues. It's important to point out that three of the diets in our study were actually veterinary therapeutic diets that you can only get through veterinarians. All three of those diets met all the nutritional adequacy and labeling requirements, while just five of the 21 over-the-counter diets did. It's really hard to compare the two groups when your numbers are so low, but I think that's an interesting finding.

**Q: What should owners whose pets eat vegetarian diets take away from this study?**

**A:** Well, we actively recommend against using over-the-counter vegetarian diets. But for owners that insist on that and are really happy with that approach, I think it's really important for veterinarians to counsel those owners to monitor their dogs and cats. Adding a plasma amino acid assessment to those routine evaluations is really important in this case.

**Q: Was the study entirely funded by CCAH?**

**A:** Yes. It was a successful resident project, so the CCAH also supported the training of my resident, Dr. Kayo Kanakubo. Hopefully that inspires a future researcher, which makes us even more grateful for CCAH's support.