

Food Allergy in Dogs and Cats: What We Know and What We Don't!

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Food allergy in dogs and cats is one of the most difficult allergies.



We don't have a rapid diagnostic test, and it is so hard to tell the difference between a real allergy to a food, and a food intolerance. For that reason, many dermatologists prefer to call food reactions cutaneous adverse reactions to food (CAFR). Some dogs have sensitive gastrointestinal tracts and they need easily digestible diets; this is not an actual allergy. A real food allergy is an immune reaction to a food protein. Often in veterinary medicine, we look to human medicine to help us with allergies, but with regard to food allergy, there seems to be some distinct differences. Human food allergies are most often mediated by the allergic antibody IgE, the same antibody that reacts to environmental allergens, e.g., pollens, molds, dusts, and danders. One of the most common IgE-mediated food allergies is to peanut, and exposure to peanut can be deadly. We believe that dogs and cats have IgE reactions to foods too, but often there are other immune reactions that mediate food allergy.

So let's answer some frequently asked questions and provide some new information recently published that can help us make a better diagnosis. There have been a series of 9 papers, called critical appraisals, that have reviewed all the veterinary literature on food allergies in dogs and cats. These are open access papers and the references are listed at the end.

Why do dogs and cats get food allergy?

It seems crazy that any mammal would develop an allergic reaction to food. We all have to eat to survive. So why would any of us, whether human, canine, or feline, become allergic to what sustains us? We have to start with the immune system. Like allergies to environmental allergens (e.g. pollens, molds, dusts, danders), dogs and cats have an immune system that is able to respond to food allergen proteins. But as we know for atopic dermatitis, it is much more complex than just a genetic predisposition. The immune system of the gastrointestinal tract is specifically designed to be tolerant to food. The gut has a physical, chemical, and immune barrier to prevent an inflammatory reaction to foods. We also know that the gut microbiota (the friendly bacteria, fungi, and viruses that normally live in the GI tract) are very important in this barrier

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function. But just as we see in atopic dermatitis and the skin, there are barrier defects in the gut that could allow penetration of allergenic proteins and stimulation of the immune response. It is interesting to note that when cats have roundworms and they are fed bovine serum albumen, they develop allergic antibodies to that protein. We also have anecdotal reports that food allergy and environmental allergies can develop in dogs that have had severe GI parasitic infestations. Most immunologists believe that the arm of the immune system responsible for allergies was originally meant to control parasites. It is interesting to note that more environmental and food allergies occur in people and pets in developed countries, where parasitic infestations in the gut are less common than in undeveloped countries. Developed countries also have good nutrition, clean water, and vaccines for our pets and ourselves. What other factors contribute? There is always interest in looking at the influence of diet. Certainly in developed countries, our diets are more processed. There is some suggestion that highly processed diets are more inflammatory. We lack hard evidence for animals, but it seems worth considering and requires more study. One question I have asked is why dogs with food allergy get skin symptoms instead of, or in addition to, gastrointestinal signs? New data in human atopic dermatitis suggests that food allergens can be absorbed directly through the skin! Think of babies with food all over their faces, and puppies standing in their first solid food, with food on their feet and their faces! We also know that the skin communicates with the gut, so information can be transmitted between the two organs.

How common is food allergy in dogs?

This is an important question, but so difficult to answer. It depends on what population of dogs you are studying. And the data we have are problematic, because documenting food allergy can be very difficult. The gold standard is to feed a strict diet for a set period of time, and then challenge to discover what foods exacerbate the problem. This is easier said than done! Many people whose pets get better on a diet are reluctant to do the challenges, as we are looking for the itch and inflammation to come back. For people, the food challenges are done in the medical clinic; the potentially incriminating foods are in capsules so the patient doesn't know whether they are taking the actual food or a placebo. We have not done this in veterinary medicine. Based on the critical appraisal papers, anywhere from 10-60%



of dogs with allergic skin disease could have food allergy. Keep in mind, however, there were only 5 papers! And if we look at dogs with atopic dermatitis, anywhere from 10-50% could have food triggers, again based on only 5 papers. We definitely need more work in this area, and better ways to test for food allergy. What has become clear though is that pure food allergy, where all of the clinical signs are controlled with diet alone, is uncommon (2% of dogs or less). It is more likely that dogs with food allergy also have environmental allergies as well. The value of a diet trial is to see if we can control the itch and inflammation most of the year with diet control, and

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then use our allergy medications to control disease associated with pollens that occur during specific times of the year. Dogs with food allergy have nonseasonal itch and inflammation. If a dog can have even a couple of weeks a year where they are not itchy without medication, they are not food allergic.

How does food allergy manifest in dogs?

There are no specific signs that prove a dog has a food allergy. With regard to the skin, we can see itchy inflamed skin that looks just like atopic dermatitis. We can also see itch and inflammation on the back half of the body that can resemble flea allergy. Some dogs can develop hives and even anaphylaxis (severe allergic reaction that is life-threatening). Fortunately in dogs this is rare. We also see recurrent skin and ear infections. Veterinarians increase their level of suspicion for food allergy when gastrointestinal signs accompany the skin disease. We see intermittent vomiting, loose stools, frequent bowel movements (more than 2 or 3 per day), and/or frequent burping or flatulence. It seems that about 25% of dogs could have both skin and GI signs.

What are the most common food allergens for dogs?

Robust marketing to the contrary, grains are not a common cause of food allergy. The 3 most common food allergens in dogs are beef, milk products, and chicken. Animal proteins are more likely to cause food allergy than grain proteins or carbohydrates. Keep in mind, though, that dogs become allergic to what they eat regularly. A dog that eats pork regularly can become allergic to pork; a dog that eats fish regularly can become allergic to fish. There is no naturally hypoallergenic food.

How do we test dogs for food allergy?

We would all like an easy test, but the reality is that serum testing, saliva testing, and hair testing is simply not accurate enough. There are false positives and false negatives for each of these. In fact, a recent study showed that fur clipped from a stuffed toy showed positive reactions to foods, and that saline tested positive for foods when submitted for saliva or serum testing. The only way to prove a food allergy is to do a diet trial and then confirm with food challenges. The data in the critical appraisal papers suggest that we can diagnose food allergy in 96% dogs if we feed the diet for 8 weeks. We also have new evidence that this time could be shortened if dogs are treated with glucocorticoids or oclactinib (Apoquel[®]) as we start the diet trial. By reducing itch and inflammation quickly with medications, some dogs can do much better after 4 weeks on the diet. Then we can challenge with the old diet to see if the itch and inflammation comes back. By doing food challenges, we can discover what foods to avoid in future. The next question is what prescription diet is best for a food trial, and why does it have to be a prescription diet? These prescription diets are prepared very stringently and tested for contaminants before they are released; over-the-counter diets are not prepared to be free of contaminating proteins that are not listed on the label. As veterinarians, we can help you choose the right diet based on what your dog has been eating in the past. A diet history that contains the type of food fed, any treats, and any flavored medications is extremely helpful. We have some choices between hydrolyzed diets and novel protein diets, but most dermatologists now advocate for a highly hydrolyzed diet like Royal Canin's Ultamino[®]. The reason for this recommendation is that most of the novel proteins we have used in the past are now present in over-the-counter diets, and we recognize now that there is cross-reactivity among proteins. Dogs allergic to beef could be reactive to venison or lamb, and dogs allergic to chicken could be reactive to turkey or duck. There is even evidence of cross-reactivity between fish and chicken. A new diet has been released recently by Purina,

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called Elemental[®]. This diet contains purified amino acids instead of intact or hydrolyzed protein. It is highly palatable and approved for growing dogs. Early information suggests that it can be very effective. Other options are to consider the novel protein diets available at Rayne Clinical Nutrition (<https://raynenutrition.com/>). For those who wish to cook for their dogs, there are services offered by veterinary nutritionists who can help create a balanced diet for you. Here are some websites with their information.

1. Veterinary Nutritional Consultations, Inc.
<https://www.vetnutrition.com/>
2. Petdiets.com
<https://www.petdiets.com/Consultation/Owner>
3. Balance it
<https://secure.balanceit.com/ez/index.php?rotator=NewEz>

What about treats when a dog is on a diet trial?

We need to stop all the treats the dog was having before, but there are some acceptable ones! Many dogs will eat a few pieces of kibble from their diet if we call it a treat! Some dogs are more discriminating. I like to use the Potato Pleasers[®] from Serenegy (<https://www.serenegy.com/products/potato-pleasers>) as treats. Many dogs, including my own, love them. Purina also makes Gentle Snackers[®], which contain the ingredients of their diet HA[®]. Also available are kangaroo meatballs available from Rayne Clinical Nutrition. What about giving pills? We can't use Pill Pockets, but you can use vegan marshmallows!

My dog is taking an oral chew to control fleas and ticks. What do I use during the food trial?

This question often comes up and it is a good one. The best flea and tick medications now are isoxazolines, which will kill any parasite that crawls on a dog. They have revolutionized our ability to control parasites on the skin. Because they work better than the older topical medications, and because we don't want the dogs to get fleas while on the diet trial, I recommend that they stay on their parasite control. Most of the products are given once monthly and contain ingredients that rarely cause a food allergy. You can start the diet on the day you give the medication and give the next dose in a month and watch for a flare. If you want to avoid a monthly, oral Bravecto[®] (fluralaner by Merck) can be given at the beginning of the food trial, as it doesn't have to be repeated for 8 – 12 weeks. The monthly products include Nexgard[®] (afoxolaner now through BI), Simparica[®] or Simparica Trio[®] (sarolaner by Zoetis), and Credelio[®] (lotilaner through Elanco). Keep in mind that

Credelio and Bravecto must be given with a full meal to be effective.

My dog got better on the diet! How do I do a food challenge?

It is wonderful when a dog's allergy gets better on a diet trial. The prescription diets we use for food trials are complete and balanced and you can choose to feed them permanently; however, I think the food challenges help you understand exactly what to avoid and what treats you can come back to using. Because we use small amounts of food for the challenges the disease does not come back in full force. As soon as we see a return of itch and inflammation, we stop the offending food and use allergy medication to quickly control the flare. To do the initial challenge, we mix the old diet in with the prescription diet, ¼ old to ¾ prescription, and feed that daily until we see a flare or 7 days. An excellent recent paper from Japan suggests that 83% of dogs with food allergy will flare within 24 hrs, and 94% in 72 hrs. If there is no flare, then reintroduce the treats one at a time to see if those induce a flare. For example, some dogs can react to beef rawhide chews, so substitutes can be found. Once the



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flare is established, how do we know what to feed in future? Here is where the real investigative work comes in. We can do individual food challenges. I usually start with chicken and feed a little chicken breast every day until a flare occurs or for 7 days. Most of my patients have eaten chicken-based diets, so many of them are reactive to chicken. If no response to chicken you can do individual challenges with proteins you are interested in feeding, such as beef, fish, lamb, or pork, each one at a time, until you find what the dog can tolerate. Then those are proteins within dog foods that your dog can tolerate. We may do single challenges with wheat germ, corn, potato too, if indicated. This is a lot of work. My own atopic dog ate Purina HA for 8 weeks, then we fed him a test meal of a diet with chicken, which caused the flare. I bought a small bag of a lamb-based OTC diet which he tolerated. As long as he avoided chicken he did well. Each dog is an individual. There are some dogs that are so sensitive, they do better by staying on the prescription diets.

Summary

Food allergy can be frustrating because we don't have a rapid test. Keep in mind that food allergy causes nonseasonal signs. The value of the food trial is to control the signs by diet and reduce the need for constant medication. If you are interested in reading more, some references are listed below. Also, listen to the wonderful podcast on food allergy by Dr. Brittany Lancelotti. She is a veterinary dermatologist who has started a free podcast called "Your Vet Wants You To Know." Here is the website link. <https://yourvetwantsyoutoknow.com/episodeposts/page/4/> There are many topics of interest to

Westie owners, including good discussions on the medications we use to control allergic diseases.

Food allergy-critical appraisals

1. Duration of elimination diets
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551374/>
2. Common food allergy sources in dogs and cats (spoiler alert: it's not grains)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4710035/>
3. Prevalence of cutaneous adverse food reactions in dogs and cats.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5311844/>
4. Can we diagnose adverse food reactions in dogs and cats with in vivo or in vitro tests?
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5577833/>
5. Discrepancies between ingredients and labeling in commercial pet foods.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5778722/>
6. Prevalence of noncutaneous manifestations of adverse food reactions in dogs and cats.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6233561/>
7. Signalment and cutaneous manifestations of dogs and cats with adverse food reactions.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6507158/>
8. Storage mites in commercial pet foods
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6822402/pdf/12917_2019_Article_2102.pdf
9. Time to flare of cutaneous signs after a dietary challenge in dogs and cats with food allergy
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7247231/pdf/12917_2020_Article_2379.pdf

