

**NOVEL PROTEIN**

A thorough diet history must be asked of the owner inquiring which proteins the pet has been exposed to previously.

**NUTRITION NOTES**

# See Ya Later, Alligator! The Hypoallergenic Diet to Aid Patients

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Hippocrates said, “let food be your medicine and your medicine be food.” Wouldn’t it benefit our allergic patients to be able to control their symptoms with diet and less, if any, medications? Clinically, presentations of food hypersensitivity appear the same as food intolerance, but immunologically they are different. Food allergy in pets has been described as early as 1920 yet the diagnosis is often elusive as it coexists 20-30% of the time with other allergies.

**FOOD ALLERGY—DOGS**

The old belief of food allergy not being steroid responsive is not necessarily true. The incidence is anywhere from 10-49% with the age of onset being extremely variable. In one-third of dogs, the age of onset is < 1 year old. Other reports claim 48% of patients are < 1 year of age with 83% being < 3 years of age. The symptoms are nonseasonal with variable response to steroids.

Areas of the body affected include the face, feet, axillae, perineum, inguinum, and ears. In one study, 25% of dogs showed only ear involvement, some of which was unilateral. Skin lesions can vary from papules, erythema, excoriations, hyperpigmentation, seborrhea, and recurrent bacterial/fungal infections. Unusual manifestations of food allergy include erythema

multiforme, seizures (10% of dogs), lupoid onychodystrophy, vasculitis, and pemphigus. Severe reactions may include angioedema — an example of which in humans is “oral allergy syndrome” where inhalants from the environment cross react with food allergens.<sup>1</sup> Breeds more commonly seen with food allergy include Shar pei, German Shepherds, Boxer, Pug, West Highland Terrier, Rhodesian Ridgeback, and Labrador Retriever. Irish Setters are a breed used in gluten enteropathy research for humans. Gastrointestinal problems may occur in up to 50% of food allergic dogs and affect the stomach, small bowel, or colon.

Be sure and ask the owner about any bowel symptoms such as increased stools (up to 3x daily), flatulence, poor stool quality, vomiting, bloating, or anorexia as these symptoms can suggest food allergy. Bowel biopsies of food allergic dogs may include lymphoplasmacytic +/- eosinophilic gastroenteritis. Depending upon which country performs the studies, beef, dairy, and wheat are the most common food allergens but corn, wheat, egg, chicken, soy, dairy and any other previously fed protein sources the dog has eaten should be avoided.

**FOOD ALLERGY—CATS**

The incidence is anywhere from 10-49% with the age of onset being extremely variable anywhere

from 6 months of age up to 12 years of age. In one study, one-third of food allergic cats were Siamese or Siamese crosses. Symptoms and lesions may include pruritus without lesions, miliary dermatitis, head/neck/ear pruritus, scaling, eosinophilic granuloma complex lesions, or self-induced alopecia. Lymphadenopathy may be present in 30% of cats and 30% of cats may have accompanying flea allergy or atopy. Gastrointestinal problems can occur in up to 50% of food allergic cats with bowel biopsies yielding lymphoplasmacytic +/- eosinophilic inflammation. Studies in cats show that beef, dairy, and fish are the most common food allergens but wheat, egg, chicken, soy, and dairy should also be avoided when choosing a hypoallergenic diet as well as any previously fed protein. The problem in cats is getting them to eat a new diet.

## FOOD ALLERGY MYTHS

Grain free **is not** hypoallergenic. It is also not necessarily low in carbohydrates as other carbohydrates such as pea, potato, and tapioca may be higher in calories with weight gain as a result. Another misnomer is that meat by-products are “bad.” Meat by-products, which include the heart, lungs, liver, and stomach all have more essential nutrients than skeletal muscle meat. “Human grade” is a designation used by Honest Kitchen, as in 2007 they sued the State of Ohio to use the term as a matter of free speech. It wasn’t until August, 2016 that AAFCO defined “human grade” and set standards for the use of this term. The term may only be used in reference to the product as a whole, not if only one ingredient is human grade. Documentation that each and every ingredient is human grade and the facility manufacturing conforms to human grade food standards including shipping to qualify. The term cannot be given undue emphasis on the package label or be larger than “statement of use.”

## HEART DISEASE (DCM) IN GOLDEN RETRIEVERS FED GRAIN-FREE DIETS

Taurine is an amino acid needed for normal development/function of heart, eyes, muscle. Taurine deficiency is a cause of DCM.<sup>2</sup> If the owner wants to feed a grain-free diet it would be prudent to measure taurine levels before and after starting the diet. Taurine deficiency can also be seen in lamb-based diets as lamb meat does not hold taurine well, and it gets excreted in the feces.

## FOOD ALLERGY—MECHANISM OF ACTION

In patients with enhanced gastrointestinal (GI) permeability, food allergy may perpetuate inflammatory bowel disease (IBD) yet not be the primary cause of IBD. A normal mucosal barrier and normal IgA levels, which are the body’s first step in recognition and elimination of foreign antigens needs to be present. Digestion results in protein breakdown to free amino acids and small peptides, which are poor antigens. Poor digestion results in large polypeptides and residual antigenic proteins that are highly reactive in the gut and activate the immune system. Protein hydrolysates of <10,000 Daltons are less likely to elicit an allergic response. Food allergy is suspected to involve Type I, II, III, IV, and V reactions, which is one of the reasons serum testing for food allergy is not valid! Food additives are often blamed for allergies, yet there is little data to support this.

## SELECTING A HYPOALLERGENIC DIET AS A DIAGNOSTIC FOR FOOD ALLERGY

A thorough diet history must be asked of the owner inquiring which proteins the pet has been exposed to previously. With the advent of over-the-counter “limited ingredient diets,” our protein selections are dwindling. One study found that 4 over-the-counter “limited ingredient” venison diets also contained soy, poultry, and beef that were in the diet yet not listed on the label.<sup>3</sup> A follow-up study evaluated “no soy” diets yet 3 out of 4 diets were positive for soy antigen.

Use a prescription hypoallergenic diet or home-cooked diet with either a single novel protein or protein hydrolysate as a test for food allergy. Manufacturers of prescription hypoallergenic diets test their final product for other proteins that over-the-counter food manufacturers do not.

Another study of a prescription hydrolyzed chicken diet revealed that there was potential for up to 50% of chicken allergic dogs to react to that protein hydrolysate diet.<sup>4</sup> Another chicken based hydrolyzed diet did not show chicken cross reactivity but possible reaction to the cornstarch contained in the diet where dogs were corn sensitive.<sup>5</sup> Serum or skin testing for food allergy in the dog and cat has yet to be proven valid. A study revealed serum testing for food showed 80% negative correlation vs. only 20% positive correlation.<sup>6</sup>

## WHAT ABOUT RAW DIETS?

Owners are motivated by “it’s what’s fed in the wild” and “it’s natural.” What is not understood by owners is that dogs have evolved over wolves to digest plants and carbohydrates. There are 36 regions of the genome that differ between dogs and wolves, 10 of which play a role in digestion and metabolism. These diets may not be optimal for domesticated dogs and cats living in our homes hoping to live a long life. Contamination rates in dry pet foods are still markedly lower than in raw pet foods. Raw or freeze-dried diets carry the same risks of pathogen contamination as freezing and freeze drying does not destroy all pathogens. 21-44% of chicken for human consumption was found to harbor Salmonella with commercial raw pet foods containing 20-48% Salmonella contamination. Overall rates of Salmonella contamination in raw diets was 15/96 (15.6%) vs. 1/480 (0.21%) in commercial dry diets. In a 2001 U.S. study, all 5 raw diets tested had calcium: phosphorus ratio, Vitamin A, D, & E imbalances with one diet containing twice the amount of Vitamin D recommended by AAFCO. When owners make their own raw diets, 60% were found to contain nutritional imbalances.

## WHAT IS THE RELATIONSHIP BETWEEN FOOD ALLERGY AND ATOPIC DERMATITIS (AD)?

Atopic dermatitis has historically been used in relation to environmental allergies. Food-driven skin disease may look indistinguishable from pollen-driven allergy. AD and food allergy are felt to no longer be separate! A patient’s microbiome includes skin flora and GI flora (combination of microorganisms and their genetic material), which helps define their skin and mucosal barrier.<sup>7</sup> Any alteration can result in clinical disease. In some dogs with clinical AD, food allergens trigger their disease, which is termed “food-induced” AD. Predisposed breeds to food-induced AD include: West Highland Terriers, Boxers, Rhodesian Ridgebacks, Pugs, and German shepherds. Clinical signs usually start at < 12 months of age in 60% of dogs, with GI issues seen in 31% and Malassezia seen in 43%. This young age of onset in dogs is very much like in humans. Human studies show that food sensitization occurs across an inflamed skin barrier. Food protein in dust samples in the home predisposes to early food allergy especially if excoriation (ie, an altered skin barrier) is present. The question exists as to whether food allergy exists first or AD, then promotes food sensitivity.<sup>8</sup> AD and food allergy in dogs are almost impossible to distinguish clinically as both may be present in the

same dog. Cross over syndromes such as “oral allergy syndrome” in humans occur in dogs with worsening of AD by ingesting inhalants such as storage mites.<sup>8</sup>

## HOW WE CAN HELP OUR ALLERGIC PATIENTS

Use a prescription hypoallergenic novel protein diet in our atopic patients—many may be food allergic as discussed. Remember that with hydrolysate diets, there can be cross reactivity with chicken, soy, or cornstarch in those patients with those sensitivities. Cooking a hypoallergenic diet is also an option. Visit [balanceit.com](http://balanceit.com) for a completely nutritionally balanced hypoallergenic diet. **TVP**

## References

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