



What's the deal with grain?

Over the past twenty years, low carbohydrate, grain-free and gluten-free diets have become increasingly popular with people due to either proven or perceived health benefits.

Such a loaded discussion is beyond the scope of our own expertise at Mer Bleue Veterinary Hospital but it opens the door to a similar discussion regarding our animal companions.

Often trends popularized with people eventually find their way into the veterinary world, from holistic and all-natural diets, to exotic proteins, to the topic of this discussion, grain-free diets.

Although many of these are eventually proven to be innocent marketing gimmicks, some of these fads may inadvertently end up creating health issues for our furry friends.

Our goal is to provide you with scientific facts which will hopefully offer some weight when you are making a choice about which diet you choose.

Let's define grains

First of all, it would be useful to understand what we mean by "grains" in our discussion. The simplest definition would be seeds from cereal plants. These include most notably wheat, barley, corn, millet, oats, rice, rye and sorghum.

It is also important to note the difference between low carbohydrate diets and grain free diets. Many grain-free diets will add either tubers (potatoes, sweet potatoes) or legumes (soybean, peas, lentils) as a carbohydrate substitute. Either of these groups will usually provide more carbohydrates than any of the grains listed above. This article's purpose is to discuss grain-free diets and not low carbohydrate diets.

Why are grain-free diets so popular?

These days, it seems everyone knows a dog with suspected food allergies. These will usually manifest as either skin issues (greasy or flaky coat, severe itching, chronic skin or ear infections) or digestive issues (chronic diarrhea, vomiting, regurgitation, poor weight).

Given the prodigious amount of information available online and through social media it has become increasingly popular to target grains as the source for the suspected food allergies especially as so many people now claim to be gluten-intolerant. This has led to wheat, by far the most common source of carbohydrates found in most commercial dog and cat foods, to be the primary suspect when addressing suspected food allergies. It is also important to note the

distinction between gluten and grains since some grains (ie. corn and rice) do not contain any gluten.

Grains such as wheat or corn are not the “cheap fillers” so many of us have been led to believe. In reality, grains are an excellent source of fatty acids, protein, vitamins, minerals and dietary fibres for colonic health. ¹

Food hypersensitivity (or allergy) and intolerances (cases where the body has a difficult time digesting a particular nutrient and the immune-system does not play a role) have become very commonplace in our furry friends.

There are numerous studies showing a wildly varying percentage of the dog and cat population being affected by food allergies.

- One study shows only 1% of the canine population suffers true allergic food reactions. ²
- Another study reported ~5% of skin diseases in dogs and ~15% of allergic skin disorders were linked with true food allergies. ³
- In yet another study evaluating dogs with year-round itching, a link with diet was established in 40-52% of cases. ⁴

While food intolerances and allergies may be a major issue with our animal companions, a direct link with grain allergies is extremely rare.

When it comes to gluten sensitivity there is sparse evidence of this being an issue in dogs and cats. The most notable record of a celiac-like disease in dogs occurred twenty-five years ago in a family of Irish Setters.⁵ Celiac disease in humans is a condition where the body’s immune-system reacts to gluten, mostly found in wheat, barley and rye, leading to severe intestinal disease.

Most food reactions are linked to animal protein and not grain.

¹ Weeth L., Takashima G., Nutritional myths and cases that went wrong, World Small Animal Veterinary Association Congress Proceedings, 2019.

² Day M., The Canine model of Dietary hypersensitivity. Proc Nutr Soc 2005; 64: 458-464

³ Denis S., Paradis M., L’allergie alimentaire chez le chien et le chat. Revue de la littérature Med Vet Quebec, 1994; 24 : 15-20

⁴ Loeffler A., Soares-Magallenaes R., Bord R., et al. A retrospective analysis of case series using home-prepared and chicken hydrolysate diets in diagnosis of adverse food reactions in 181 pruritus dogs. Vet Dermatol 2006; 17: 273-279

⁵ Daminet SC, Gluten-sensitive enteropathy in a family of Irish Setters. Can Vet J, 1996; 37: 745-746.

A review of 297 dogs with food allergies showed the most common culprit was beef at 34%. This was followed by chicken at 17%, lamb at 15% and wheat at 14%.⁶

The same study demonstrated cats had most of their food allergies caused by beef at 18%, fish at 17%, chicken at 5%, dairy products at 4% and lamb at 3%.⁷

Is there a way to know what food allergen is affecting my dog or cat?

While there is no lack of available tests for food allergies, from blood to saliva tests, unfortunately none of them have been shown to be particularly reliable.

In numerous studies, blood food allergy panels have been shown to be non-repeatable, which means that the same test repeated on the same patient will yield different results each time. A negative or positive result does not appear to correlate with actual food triggers.⁸

The only method of truly determining if a food allergy exists is to perform a **strict 8-to-12 week diet-trial** using a prescription allergy diet. Over the counter diets from pet stores and grocery stores are not-considered sufficiently reliable due to risk of cross-protein contamination. Most dog and cat food companies cannot make a guarantee that any of their diets do not contain microscopic traces of other types of proteins. For example, a rabbit-based diet may contain trace beef protein from the previous type of food made with the same equipment.

What's the harm of continuing on a grain-free diet if it is helping my dog?

It's always difficult to argue with results.

Many individuals have switched to grain-free diets and following this change, have noted significant reductions in the skin or digestive problems afflicting their animal companion.

No two brands of food are exactly alike in their ingredients and recipe, so we must always ask ourselves whether it is the lack of grains in the diet or whether there is another factor or ingredient at play.

⁶ Mueller RS, Olivry T, Prelaud P: [Critically appraised topic on adverse food reactions of companion animals \(2\): common food allergen sources in dogs and cats](#). BMC Vet Res 2016 Vol 12 (0) pp. 9.

⁷ Mueller R S, Olivry T, Prelaud P: [Critically appraised topic on adverse food reactions of companion animals \(2\): common food allergen sources in dogs and cats](#). BMC Vet Res 2016 Vol 12 pp. 12-19.

⁸ Hardy JI, Hendricks A, Loeffler A, et al. Food-specific serum IgE and IgG reactivity in dogs with and without skin disease; lack of correlation between laboratories. Vet Dermatol, 2014; 25: 447-e470



Regardless, in the past several years, evidence has been uncovered showing us how feeding our canine companions a grain-free diet may be leading to heart disease.

In 2018, several veterinary cardiologists noted unexplained surges of dilated cardiomyopathy (DCM) in certain breeds, most notably Golden Retrievers.

Dilated cardiomyopathy is a condition leading to weakness of the pumping muscle of the heart which in turn causes enlargement of the heart chambers and eventually heart failure.

In breeds such as Doberman Pinschers, Great Danes and Boxers it is an inherited condition caused by a genetic mutation.

However, other breeds such as Golden Retrievers have never been known to carry this same mutation.

Since 1987, we have known cats were able to develop this same type of heart disease due to a deficiency in their body's ability to produce a specific amino acid, called Taurine. Amino acids are the building blocks of protein and serve numerous vital functions in the body. This amino acid is plentiful in meat therefore cats, being strict carnivores never had a need to develop the ability to make their own taurine.⁹

In commercial cat and dog foods, the meat will be cooked which inactivates most of the taurine. Additional taurine must be added to the food after it has been cooked to replace the inactivated taurine.

Initially, it was believed that a deficiency of the amino acid taurine was the primary cause for the development of heart disease in dogs eating grain free diets. The challenge has been that most groups studied were quite small which means they may not have been a complete representation of the entire dog population. Based on more recent studies, taurine deficiency does not appear to be the main cause as there was no increase in survival in dogs with added taurine to their food.¹⁰

Regardless of the cause, in the United States, the Food and Drug Administration (FDA) as of July 2018 has issued a warning to people about the dangers of feeding a grain-free diet to dogs.

⁹ Morris Animal Foundation. Researchers getting closer to understanding dietary taurine and heart disease in dogs. 2017

¹⁰Fried KJ, Freeman LM, Rush JE, Cunningham SM, Davis MS, Karlin ET, Yang VK, Retrospective study of dilated cardiomyopathy in dogs, Journal of Veterinary Internal Medicine, Nov 2020,



Taurine deficiency remains a possible factor in the development of heart disease on grain-free diets but it is believed there could be numerous co-existing factors such as other nutritional deficiencies, toxins, environmental and genetic factors.¹⁰

In a study published in August 2021, peas were found to be a leading culprit in the rise of DCM associated with grain-free diets.¹¹

Final thoughts

When all is said and done, you are the one who will need to choose the diet for your animal companion. We will do everything we can to offer advice when you are making your choice.

Choosing a diet is about asking the right questions and knowing what risks are associated with any particular diet. In the case of grain-free diets it is important to note the possible risk associated with heart disease. This is not to say that every single dog on a grain-free diet will develop heart problems and not every dog with food allergies will respond to grain-free diets.

At Mer Bleue Veterinary Hospital we believe in choosing the option with the fewest risks. Some larger breed dogs, including Golden Retrievers, St Bernards, Newfoundlanders, Irish Wolfhounds, English Setters and Portuguese Water Dogs, may be genetically less efficient at making taurine therefore could be at higher risk. Therefore, in these breeds, it would be advisable to avoid grain-free diets.

As this is such a new discovery, veterinary specialists including nutritionists, continue to investigate further. As more is discovered with grain-free diets and their link with heart disease, we at Mer Bleue Veterinary Hospital will share this information with you.

¹¹ Smith CE, Parnell LD, Lai C, Rush JE, & Freeman LM. Investigation of diets associated with dilated cardiomyopathy in dogs using foodomics analysis. Scientific Reports 15881, August 2021.