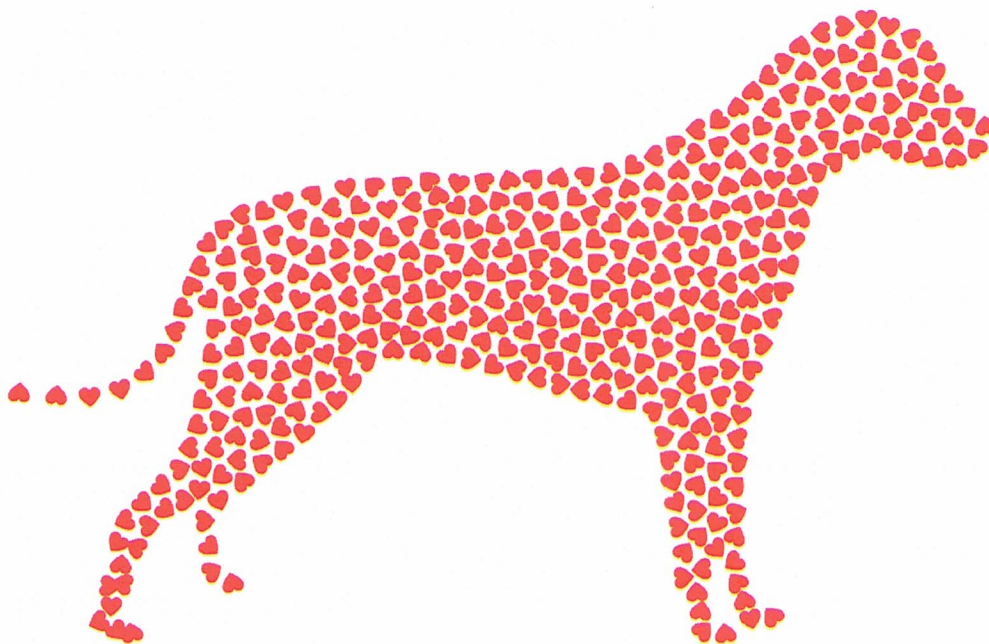


A broken heart: Risk of heart disease in boutique or grain-free diets and exotic ingredients



by Lisa M. Freeman, DVM, PhD, DACVN

JUNE 04, 2018

IN FINDING THE BEST FOOD FOR YOUR PET, PETFOODOLOGY BLOG

Earlier this year, Peanut, a 4-year-old male Beagle/Lab mix was diagnosed with a life-threatening heart disease at our hospital. Peanut had been lethargic, not eating well, and occasionally coughing. The veterinary cardiologist seeing him asked what he was eating and found that his owner, in a desire to do the best thing for Peanut, was feeding a boutique, grain-free diet containing kangaroo and chickpeas. Peanut required several medications to treat his heart failure but the owner also changed his diet. And today, now 5 months later, Peanut's heart is nearly normal!

Heart disease is common in our companion animals, affecting **10-15% of all dogs and cats**, with even higher rates in Cavalier King Charles Spaniels, Doberman Pinschers, and Boxer dogs. Most nutritional recommendations [focus on treating dogs and cats with heart disease](#) and there is much less information on the role of diet in causing heart disease. However, a recent increase in heart disease in dogs eating certain types of diets may shed light on the role of diet in causing heart disease. It appears that diet may be increasing dogs' risk for heart disease because owners have fallen victim to the many myths and misperceptions about pet food. If diet proves to be the cause, this truly is heart-breaking to me.

In my 20 years as a veterinary nutritionist, I've seen vast improvements in our knowledge about pet nutrition, in the quality of commercial pet foods, and in our pets' nutritional health (other than the unfortunate rise in obesity). However, in the last few years I've seen more cases of nutritional deficiencies due to people feeding unconventional diets, such as unbalanced [home-prepared diets](#), [raw diets](#), [vegetarian diets](#), and boutique commercial pet foods. The pet food industry is a competitive one, with more and more companies joining the market every year. Marketing is a powerful tool for selling pet foods and has initiated and expanded fads, that are unsupported by nutritional science, including grain-free and exotic ingredient diets. All this makes it difficult for pet owners to know what is truly the best food for their pet (as opposed to the one with the loudest or most attractive marketing). Because of the thousands of diet choices, the creative and persuasive advertising, and the vocal opinions on the internet, pet owners aren't able to know if the diets they're feeding have nutritional deficiencies or toxicities – or could potentially even cause heart disease.

Dilated cardiomyopathy

Dilated cardiomyopathy or DCM occurs in cats where it is associated with a nutritional deficiency (see below). DCM is a serious disease of the heart muscle which causes the heart to beat more weakly and to enlarge. DCM can result in abnormal heart rhythms, congestive heart failure (a build-up of fluid in the lungs or abdomen), or sudden death. In dogs, it typically occurs in large- and giant-breeds, such as Doberman pinschers, Boxers, Irish Wolfhounds, and Great Danes, where it is thought to have a genetic component. Recently, some veterinary cardiologists have been reporting increased rates of DCM in dogs – in both the typical breeds and in breeds not usually associated with DCM, such as Miniature Schnauzers or French Bulldogs. There is suspicion that the disease is associated with eating boutique or grain-free diets, with some of the dogs improving when their diets are changed. The US Food and Drug Administration (FDA) Center for Veterinary Medicine and veterinary cardiologists are currently investigating this issue.

Is diet the cause?

It's not yet clear if diet is causing this issue. The first thought was a deficiency of an amino acid called taurine. DCM used to be one of the most common heart diseases in cats but in 1987, it was discovered that feline DCM was caused by insufficient taurine in the diet. It was shown that DCM in cats could be reversed with taurine supplementation, and now all reputable commercial cat foods contain enough taurine to prevent the development of this lethal disease. We still occasionally see taurine deficiency-induced DCM in cats but it is usually when owners are feeding a vegetarian or home-prepared diet, [supplemental diets](#), or a diet made by a manufacturer with inadequate nutritional expertise or quality control.

In dogs, Golden Retrievers and Cocker Spaniels were found to be at risk for DCM caused by taurine deficiency, and one study showed that Cocker Spaniels with DCM improved when given taurine supplementation. Since then, additional studies have shown associations between dietary factors and taurine deficiency in dogs, such as lamb, rice bran, high fiber diets, and very low protein diets. And certain other breeds were found to be at increased risk for taurine deficiency and DCM, including Newfoundlands, St. Bernards, English Setters, Irish Wolfhounds, and Portuguese Water Dogs. The reasons for taurine deficiency in dogs are not completely understood but could be reduced production of taurine due to dietary deficiency or reduced bioavailability of taurine or its building blocks, increased losses of taurine in the feces, or altered metabolism of taurine in the body.

No matter what the reason, the number of dogs with taurine deficiency and DCM subjectively appeared to decrease since the early 2000's. However, recently, some astute cardiologists noticed higher rates of DCM including Golden retrievers and in some atypical dog breeds. They also noticed that both the typical and atypical breeds were more likely to be eating boutique or grain-free diets, and diets with [exotic ingredients](#) – kangaroo, lentils, duck, pea, fava bean, buffalo, tapioca, salmon, lamb, barley, bison, venison, and chickpeas. Even some vegan diets have been associated. It has even been seen in dogs eating raw or home-prepared diets.

So, is this latest rash of DCM caused by taurine deficiency? Most of these affected dogs were eating boutique, [grain-free](#), or exotic ingredient diets. Some of the dogs had low taurine levels and improved with taurine supplementation. But even some of those dogs that were not taurine deficient improved with taurine supplementation and diet change. Fortunately, cardiologists reported the issue to the FDA which is currently investigating this issue. [Note: Dr. Joshua Stern from the University of California Davis is conducting [research on taurine deficiency and DCM in Golden Retrievers](#).

It's not so simple

Currently, it seems that there may be two separate problems occurring – one related to taurine deficiency and a separate and yet unknown problem (with a third group of dogs likely having DCM completely unrelated to diet). Identifying the potential dietary factors contributing to DCM in the non-aurine deficient dogs is more difficult, but the FDA and cardiologists are hard at work trying to solve it. What seems to be consistent is that it does appear to be more likely to occur in dogs eating boutique, grain-free, or exotic ingredient diets.

Exotic ingredients are on the rise

Why are pet owners feeding these exotic ingredients? I think it is primarily because pet owners are falling victim to marketing which portrays exotic ingredients as more natural or healthier than typical ingredients. There is no truth to this marketing – and there is no evidence that these ingredients are any more natural or healthier than more typical ingredients. This is just good marketing that preys on our desire to do the best for our pets.

There is no proof that grain-free is better!

Many pet owners have, unfortunately, also bought into the grain-free myth. The fact is that [food allergies](#) are very uncommon, so there's no benefit of feeding pet foods containing exotic ingredients. And while grains have been accused on the internet of causing nearly every disease known to dogs, grains do not contribute to any health problems and are used in pet food as a nutritious source of protein, vitamins, and minerals.

Exotic ingredients are more difficult to use

Not only are the more exotic ingredients unnecessary, they also require the manufacturer to have much more nutritional expertise to be nutritious and healthy. Exotic ingredients have different nutritional profiles and different digestibility than typical ingredients, and also have the potential to affect the metabolism of other nutrients. For example, the bioavailability and metabolism of taurine is different in a lamb-based diet compared to a chicken-based diet or can be affected by the amount and types of fiber in the diet.

Small pet food manufacturers might be better at marketing than at nutrition and quality control

Making high quality, nutritious pet food is not easy! It's more than using a bunch of tasty-sounding ingredients. The right nutrients in the right proportions have to be in the diet, the effects of processing (or not processing) the food need to be considered, and the effects of all the other ingredients in the food need to be addressed, in addition to ensuring rigorous [quality control and extensive testing](#). Not every manufacturer can do this.

How could diet be increasing the risk for DCM?

What is the consistent factor between the diets being implicated in diet-related DCM? It may be related to companies' inadequate nutritional expertise or rigorous quality control. We published a study several years ago in which we measured a single nutrient in 90 canned cat foods that all claimed to be nutritionally complete and balanced. We found that 15% of the diets were deficient in that nutrient (all of those diets were made by small companies). If companies don't have the quality control to ensure all nutrients are at the minimum levels, deficiencies could occur and could contribute to DCM. However, these problems could also be related to problems with bioavailability or interaction with other ingredients in the diet (especially the more exotic ingredients, which are not as well studied or understood). And DCM could even be the result of

an ingredient in the diet that is toxic to the heart. The FDA is investigating this potential association between diet and DCM but, in the meantime, there are some things you can do.

What should you do?

- Reconsider your dog's diet. If you're feeding a boutique, grain-free, or exotic ingredient diets, I would reassess whether you could change to a diet with more typical ingredients made by a company with a long track record of producing good quality diets. And do yourself a favor – stop reading the ingredient list! Although this is the most common way owners select their pets' food, it is the least reliable way to do so. And be careful about currently available pet food rating websites that rank pet foods either on opinion or on based on myths and subjective information. It's important to use more objective criteria (e.g., research, nutritional expertise, quality control in judging a pet food). The best way to select what is really the best food for your pet is to ensure the manufacturer has excellent nutritional expertise and rigorous quality control standards (see our "[Questions you should be asking about your pet's food](#)" post).
- If you're feeding your dog a boutique, grain-free, or exotic ingredient diet, watch for early signs of heart disease – weakness, slowing down, less able to exercise, short of breath, coughing, or fainting. Your veterinarian will listen for a heart murmur or abnormal heart rhythm and may do additional tests (or send you to see a veterinary cardiologist), such as x-rays, blood tests, electrocardiogram, or ultrasound of the heart (echocardiogram).
- If your dog is diagnosed with DCM and eating one of these diets, I'd recommend the following steps:
 - Ask your veterinarian to test whole blood and plasma taurine levels (I recommend the University of California Davis [Amino Acid Laboratory](#))
 - [Report it to the FDA](#). This can be done either online or by telephone. The FDA may be able to help with testing costs for your dog. Reporting it will also help us to identify and solve this current problem.
 - Change your dog's diet to one made by a well-known reputable company and containing standard ingredients (e.g., chicken, beef, rice, corn, wheat). Changing to a raw or homecooked diet will not protect your dog from this issue (and may increase the risk for other nutritional deficiencies). If your dog requires a homecooked diet or has other medical conditions that require special considerations, be sure to talk to a veterinarian or a veterinary nutritionist ([acvn.org](#)) before making a dietary change. You can contact the Cummings Nutrition Service to schedule an appointment (vetnutrition@tufts.edu)
 - Start taurine supplementation. Your veterinarian or veterinary cardiologist can recommend an appropriate dose for your dog. Be sure to use a brand of taurine with [good quality control](#).
 - Any improvements in your dog's DCM can take 3-6 months. Your dog will need regular monitoring and may require heart medications during this time. There's no guarantee she'll improve but is certainly worth a try.
 - Make sure your dog is getting the best combination of medications to treat his heart disease, as this can make a difference in his outcome. You can find a board-certified veterinary cardiologist near you on this website: <http://find.vetspecialists.com/>

Sometimes, the changes we make in pet nutrition advance our knowledge and the health of our pets. In other cases, we can take a step in the wrong direction when the marketing outpaces the

science. Hopefully, identifying this current issue will allow us to set a new, more science-based approach to the optimal nutrition of our pets.

For more information about heart disease in dogs, please see our [HeartSmart](#) website.

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GRAIN-FREE

HEART DISEASE



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Dr. Freeman is a veterinary nutritionist and a professor at Cummings School of Veterinary Medicine at Tufts University. She is on the cutting-edge of science, with hundreds of articles in prestigious journals, speaking engagements at national and international conferences, and awards for her scientific achievements. However, she also is passionate about providing objective and accurate information on pet nutrition to veterinarians, pet owners, and other animal enthusiasts.

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Questions You Should Be Asking About Your Pet's Food



by Lisa M. Freeman, DVM, PhD, DACVN

DECEMBER 19, 2016 | IN FINDING THE BEST FOOD FOR YOUR PET, PETFOODOLOGY BLOG

As a veterinary nutritionist and someone who is passionate that pets get the best nutrition possible, it pains me to see owners standing in the pet store carefully reading ingredient lists. And this is all too common. In fact, our research studies have shown that the most owners say

that ingredients are the most important factor in selecting their pets' food. The problem is that the ingredient list is one of the most useless aspects of the pet food label! While there are some regulations on the format of the ingredient list, it doesn't tell us anything about the quality of the ingredients or if they're in the right proportions. And the ingredient list is often used for marketing (Think those blueberries and artichokes are adding nutritional value to your pet's food? [Think again!](#))

Given the thousands of options for pet foods, it is confusing to separate the good ones from those that just advertise that they are good. Many owners turn to pet food rating websites to help. Unfortunately, these ratings are generally useless when it comes to helping pet owners to pick the best foods because they rank foods either on opinion (rather than scientific knowledge) or on criteria that don't ensure a good quality food (including the [ingredient list](#))

So, what's the conscientious pet owner to do? Talking to your pet's veterinarian should be the first step. Your veterinarian can help you select a food that meets your pet's nutritional needs during different life stages, based on body condition and activity level, and if medical conditions should arise.

You can also rely on one very useful piece of information on the label – the [nutritional adequacy statement](#).

However, there's information that's even more important – and that's the quality and nutritional expertise of the company that makes the food. There is a very wide spectrum when it comes to the quality control and nutritional expertise of the many, many companies that currently manufacture pet food. And the ones with the best quality are not necessarily the ones that are the most expensive or who have the best marketing! To make it even harder, the information you need to sort this out is not on the label and requires a little (and sometimes a lot of) digging.

So how can you tell about the quality and nutritional expertise? Below are some questions savvy owners should ask companies to select the best possible food for their pets (modified from the World Small Animal Veterinary Association's Nutrition Toolkit <http://www.wsava.org/nutrition-toolkit> and Freeman et al. J Am Vet Med Assoc 2013).

1. Does the manufacturer employ at least one full-time qualified nutritionist? This means a PhD in animal nutrition or board-certification (and, ideally, both) by the American College of Veterinary Nutrition or the European College of Veterinary Comparative Nutrition.

2. What are the qualifications of the person who formulates their food (if it's not the same person as their nutritionist)? This expert should have the same qualifications as in #1.
3. Does the manufacturer own the plant(s) where their food is manufactured? Most small companies do not own their own plants which can reduce the control they have over quality.
4. What quality control measures does the manufacturer practice? These vary widely among manufacturers but strict quality-control measures are critical to ensure safe, consistent, and nutritious food for your pet. Saying it's the highest quality doesn't make it true. Nor does having a statement on the label saying the food is complete and balanced. In fact, many of our studies have shown nutritional deficiencies in pet foods that claim on the label to be nutritionally complete and balanced (and the foods that had those deficiencies would not have met the standards detailed on this list). Examples of quality control measures the manufacturers should be using include certification of a manufacturer's procedures (e.g., Global Food Safety Initiative, Hazard Analysis and Critical Control Points, or American Feeding Industry Association); testing ingredients and end products for nutrient content, pathogens, and aflatoxins; materials risk assessments; and supplier audits.
5. Are their foods tested with Association of American Feed Control Officials (AAFCO) feeding trials? (this information also can be found on the label – [find out how](#)). If AAFCO feeding trials are not conducted, the manufacturer should at least ensure their diets meet AAFCO nutrient profiles through analysis of the finished product (rather than by predicting they meet the profiles based only on the recipe). This information can only be determined by asking the manufacturer.
6. Does the company conduct any research? Do they publish it in peer-reviewed journals?
7. Can the manufacturer provide you with the amount of any nutrient of interest (for example, sodium, protein, copper, or calcium). They should be able to provide this information not just as guaranteed analysis numbers (which will be only minimums or maximums, and are nearly useless), but as the average (or typical) analysis. This should ideally be provided on an energy basis (i.e., grams per 100 kilocalories or grams per 1,000 kilocalories), rather than on an as-fed or dry-matter percent basis, which does not account for the variation in energy density among foods.
8. Can the manufacturer provide you with the number of calories for any of their foods on any requested weight or volume basis (for example, per cup, per can, or per kilogram).
9. Does the manufacturer bash other pet food companies (especially using information that is based on [myths](#), rather than factual information) in their advertisements or on their websites?

If a manufacturer can't (or won't) give you all of this information (or doesn't have good answers to your questions), this should be a red flag and you should be cautious about feeding that brand. There are good manufacturers out there, but also many that leave much to be desired in terms of quality control. A little digging can help you make a more objective decision on the best quality food for your beloved canine or feline family member.

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FDA Investigating Potential Connection Between Diet and Cases of Canine Heart Disease

July 12, 2018

The U.S. Food and Drug Administration is alerting pet owners and veterinary professionals about reports of canine dilated cardiomyopathy (DCM) in dogs eating certain pet foods containing peas, lentils, other legume seeds, or potatoes as main ingredients. These reports are unusual because DCM is occurring in breeds not typically genetically prone to the disease. The FDA's Center for Veterinary Medicine and the Veterinary Laboratory Investigation and Response Network, a collaboration of government and veterinary diagnostic laboratories, are investigating this potential association.

Canine DCM is a disease of a dog's heart muscle and results in an enlarged heart. As the heart and its chambers become dilated, it becomes harder for the heart to pump, and heart valves may leak, leading to a buildup of fluids in the chest and abdomen. DCM often results in congestive heart failure. Heart function may improve in cases that are not linked to genetics with appropriate veterinary treatment and dietary modification, if caught early.

The underlying cause of DCM is not truly known, but is thought to have a genetic component. Breeds that are typically more frequently affected by DCM include large and giant breed dogs, such as Great Danes, Boxers, Newfoundlands, Irish Wolfhounds, Saint Bernards and Doberman Pinschers. It is less common in small and medium breed dogs, except American and English Cocker Spaniels. However, the cases that have been reported to the FDA have included Golden and Labrador Retrievers, Whippets, a Shih Tzu, a Bulldog and Miniature Schnauzers, as well as mixed breeds.

Diets in cases reported to the FDA frequently list potatoes or multiple legumes such as peas, lentils, other "pulses" (seeds of legumes), and their protein, starch and fiber derivatives early in the ingredient list, indicating that they are main ingredients. Early reports from the veterinary cardiology community indicate that the dogs consistently ate these foods as their primary source of nutrition for time periods ranging from months to years. High levels of legumes or potatoes appear to be more common in diets labeled as "grain-free," but it is not yet known how these ingredients are linked to cases of DCM. Changes in diet, especially for dogs with DCM, should be made in consultation with a licensed veterinarian.

In the reports the FDA has received, some of the dogs showed signs of heart disease, including decreased energy, cough, difficulty breathing and episodes of collapse. Medical records for four atypical DCM cases, three Golden Retrievers and one Labrador Retriever, show that these dogs had low whole blood levels of the amino acid taurine. Taurine deficiency is well-documented as potentially leading to DCM. The Labrador Retriever with low whole blood taurine levels is recovering with veterinary treatment, including taurine supplementation, and a diet change. Four

other cases of DCM in atypical dog breeds, a Miniature Schnauzer, Shih Tzu and two Labrador Retrievers, had normal blood taurine levels. The FDA continues to work with board certified veterinary cardiologists and veterinary nutritionists to better understand the clinical presentation of these dogs. The agency has also been in contact with pet food manufacturers to discuss these reports and to help further the investigation.

The FDA encourages pet owners and veterinary professionals to report cases of DCM in dogs suspected of having a link to diet by using the electronic **[Safety Reporting Portal](http://www.safetyreporting.hhs.gov)** (<http://www.safetyreporting.hhs.gov>) or calling their state's **[FDA Consumer Complaint Coordinators](/Safety/ReportaProblem/ConsumerComplaintCoordinators/default.htm)** (</Safety/ReportaProblem/ConsumerComplaintCoordinators/default.htm>). Please see the link below about "**[How to Report a Pet Food Complaint](/AnimalVeterinary/SafetyHealth/ReportaProblem/ucm182403.htm)**" (</AnimalVeterinary/SafetyHealth/ReportaProblem/ucm182403.htm>)" for additional instructions.

Additional Information

- **[Questions & Answers: FDA Center for Veterinary Medicine's Investigation into a Possible Connection Between Diet and Canine Heart Disease](/AnimalVeterinary/ResourcesforYou/AnimalHealthLiteracy/ucm616279.htm)** (</AnimalVeterinary/ResourcesforYou/AnimalHealthLiteracy/ucm616279.htm>)
- **[How to Report a Pet Food Complaint](/AnimalVeterinary/SafetyHealth/ReportaProblem/ucm182403.htm)** (</AnimalVeterinary/SafetyHealth/ReportaProblem/ucm182403.htm>)
- **[Veterinary Laboratory Investigation and Response Network \(Vet-LIRN\)](/AnimalVeterinary/ScienceResearch/ucm247334.htm)** (</AnimalVeterinary/ScienceResearch/ucm247334.htm>)

Contact FDA

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