

TO COOK OR NOT TO COOK? PROS AND CONS OF HOME-PREPARED DIETS WITH CASES

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LECTURE DESCRIPTION

A review of the benefits, risks, and strategies for selecting home-cooked or raw diets for pets will be discussed by a board-certified veterinary nutritionist. Strategies for assessing whether a diet is balanced will be discussed. Strategies for discussing home-cooking and raw with pet owners and available resources will also be discussed. Case examples will be included to illustrate tips and strategies as well as general pet nutrition resources available to veterinarians.

WHAT IS THE EVIDENCE BEHIND HOME-COOKED DIETS?

Cooking for pets can be very appealing to pet owners and there are anecdotal stories that tout benefits of home-cooked diets for cats and dogs. However, there is no evidence in the form of peer-reviewed clinical trials to support claims that home-prepared diets are healthier than commercial diets in general. Very few pets actually need to be fed a home-cooked diet because of health reasons (i.e., there is not a commercially available option that meets their needs) and an improperly prepared home-cooked diet can be quite harmful, especially for a growing kitten or puppy. Home-cooked diets can be a complete and balanced approach to feeding cats and dogs, however, owners should consult a board certified veterinary nutritionist and be prepared to follow a strict recipe daily that requires weighing specific amounts of each ingredient.

INDICATIONS FOR HOME-COOKED DIETS

Medical Necessity

Many medical conditions require adjusting the nutrient levels in diets outside of what is recommended for healthy pets (i.e., meeting the Association of American Feed Control Officials (AAFCO) minimum and maximum nutrient guidelines to be a complete and balanced food). There are a growing number of high quality veterinary therapeutic diets that have been formulated for various disease conditions. However, some pets may require a combination of nutrient modifications that are not available in commercial diets or in some cases, require restriction of nutrients below any commercially available diet (e.g., pets with severe protein-losing enteropathy may require fat restriction beyond the lowest fat veterinary therapeutic diet on the market). In these instances, formulating a customized home-cooked diet recipe is indicated for optimal management of the pet's disease condition.

Pet preference

Even with palatability enhancers, some pets refuse to eat commercially available diets due to preference. This can sometimes happen when pets are given a large amount of table scraps and then slowly reject commercial diets especially if pet owners offer other human foods at the first sign of refusal. There are an increasing number of complete and balanced diets that have a consistency similar to human foods (i.e., stews, tubs, etc.) and these can be tried along with palatability enhancers. Palatability enhancers can be used with caution in pets, keeping in mind altered nutrient needs of pets with medical conditions and calories content to not unbalance the diet. Reserving 10% of the pet's total calorie intake for treats or palatability enhancers lowers risk of unbalancing the diet. Some popular palatability enhancers include shredded chicken breast (200 kcal/cup) for pets without protein restrictions, homemade chicken broth (store-bought is usually high in sodium and frequently contains onion or garlic), low fat and no salt added cottage cheese (200 kcal/cup), and honey or maple syrup (60 kcal/teaspoon), which is especially helpful for dogs with kidney disease or liver disease. Note: cats do not have taste receptors for 'sweet' foods and sugary items are not as effective as a palatability enhancer. Beyond pet preferences, some medical conditions or medications can cause altered appetite and food preferences. In these situations, home-cooked diets can be helpful due to their high palatability and ability to be customized to each pet's preferred flavors or ingredients.

Owner preference

For healthy pets, and most pets with medical conditions, there is no medical necessity to provide a home-cooked diet. However, as long as the recipe is formulated by a board-certified veterinary nutritionist to be complete and balanced, home-cooking solely based on owner preference is a perfectly acceptable alternative to commercial diets. Before initiating a home-cooked diet, client communication about common myths or misconceptions of commercial pet food may alleviate some misinformed fears and ensure pet owners are making well-informed decisions for their pets.

RISKS OF HOME-COOKED DIETS

Unbalanced recipes

Home-cooked diet recipes on websites and in books (even those created by veterinarians) are often vague, out-of-date, or lack essential nutrients that are required for a diet to be complete and balanced for pets. Various studies have shown common recipes for healthy pets or pets with medical conditions have deficiencies that would be harmful. Many recipes are too vague and lead to confusion and risk of missing essential nutrients in the right proportions. One study that evaluated recipes for dogs found that only 9/200 recipes met the minimum nutrient requirements for commercial pet foods (1)! Some red flags include recipes that allow substitution of ingredients (e.g., feed 2 cups of chicken or beef or lamb) that may vary dramatically in nutrients and calories, include no vitamin and mineral supplements, or include vague supplement recommendations such as "a human multivitamin/mineral tablet". A general guide is if two people using the same recipe would not make identical diets every time, the recipe is not specific enough. What's most concerning about unbalanced recipes is that pets being fed deficient diets may go for months to years without having clinical signs or obvious problems, leading many owners to think that their pet is fine until the pet has a serious health problem that may not be easily reversed.

'Diet drift': substituting ingredients/supplements without checking with a nutritionist first

Even recipes that have been formulated by board-certified veterinary nutritionists may be harmful if not followed exactly as directed. Owners sometimes make substitutions or changes to the recipe (i.e., 'diet drift') without consulting with their nutritionist and these changes can quickly unbalance the diet leading to excesses or deficiencies of essential nutrients. This is perhaps the biggest problem board-certified veterinary nutritionists encounter when formulating nutritionally complete home-cooked diets. Tufts nutritionists did a study to evaluate clients' experiences and ability to follow home-cooked diet recipes for dogs formulated by the Clinical Nutrition Service (2). It was found that very few owners (only 13%) were still feeding the original nutritionally balanced diet recipe. And almost all of these changes to the recipe were made without consulting for advice. Interestingly, when these pet owners were specifically asked whether they had made any changes to their recipe since our original recommendations, 62% of owners answered that they had not but actually did make changes. Discrepancies were found only when comparing their current reported diet to the diet recipe that had been originally made. The reason that following the diet recipe exactly is so important is that each ingredient and its preparation method are critical for the unique nutrient profile of the home-cooked diet. Substituting ingredients, even something as simple as changing brands if the recipe specifies a specific brand, may dramatically alter the nutritional profile of the diet and make it deficient in important nutrients.

Expense

In most cases, it is significantly more expensive to prepare a nutritionally complete diet at home than to purchase a good quality commercial diet, especially for a large dog. Additionally, most owners do not factor in the costs of proper supplements for home-cooked diets, which can cost up to several dollars per day, depending on the size of the pet, on top of the costs of other ingredients. Because home-cooked diets are not tested for safety and nutritional adequacy like many commercial diets, even healthy pets eating home-cooked diets should have more frequent veterinary visits and laboratory tests (blood work, urine testing) than similar pets eating commercial diets, which also add to the expense.

Quality control

Having a diet formulated by a board-certified veterinary nutritionist ensures that the recipe will meet AAFCO minimum and maximum nutrient guidelines to be a complete and balanced food (or otherwise meet a pet's modified nutrient needs due to medical conditions). However, good quality commercial foods also undergo extensive quality control testing, digestibility trials, and feeding trials to assess for bioavailability and nutrient adequacy. Because home-cooked diets do not undergo this testing for safety and nutritional adequacy like most commercial diets, even healthy pets eating home-cooked diets should have more frequent veterinary visits and laboratory tests (blood work, urine testing) than similar pets eating commercial diets to ensure the diet is meeting their needs, which can also add to the expense of home-cooking.

PROS AND CONS OF RAW DIETS

In addition to many of the risks above that come with home-preparing diets, there are additional considerations for raw diets that owners want may to prepare at home or purchase commercially. There is some anecdotal evidence that reports numerous benefits, but scientific studies are lacking to suggest widespread benefit to cats and dogs. Some studies have shown a small increase in digestibility, though this could be the result of the ingredients, rather than the fact the diet was raw. Other studies show important concerns for nutritional imbalances and health risks to the animal, as well as serious public health concerns. Many bacteria can survive freeze and thaw cycles, so any product (including freeze-dried treats or rawhides) can still have bacterial contamination and poses a potential risk. In broaching this topic with owners, it can be helpful to acknowledge that not all pets will have adverse effects or problems with raw diets. However, it is impossible to predict which pets will have issues, so many families and veterinarians feel uncomfortable

taking that risk without more evidence of benefit. From an evidence-based medicine approach, there is not sufficient evidence of widespread benefits to outweigh the potential risks for raw meat diets at this time.

BALANCING HOME-COOKED DIETS

Due to quality control concerns as well as nutritional variability in many whole food ingredients, it is almost always recommended to use concentrated vitamin and mineral supplements in diets rather than attempt to meet all nutrient requirements using only whole foods. This approach makes the diets easier to prepare and ensures that pets receive adequate amounts of all essential nutrients. It is extremely challenging to create a recipe made of only whole foods that will consistently provide exact amounts of all essential nutrients. Additionally, a common misconception among owners is that they can 'just add a multivitamin' to a variety of human foods the pet is currently receiving to balance the diet. Protein sources vary in their nutrient profile and many of the common vitamin supplements on the market for humans or pets provide either too much or too little of the over 30 essential nutrients that pets require. Cooking for pets is a more precise science than the art of cooking for ourselves and should only be done with a specific recipe formulated by a board-certified veterinary nutritionist to ensure it is balanced.

CONTRAINDICATIONS FOR HOME-COOKING

Growth and gestation

Pregnancy, lactation, and growth are the most nutritionally demanding times in an animal's life. Nutrient concentrations that meet the needs of adult animals at maintenance could cause serious harm to a pregnant or growing animal. In fact, severe health problems have been reported due to nutritionally unbalanced diets in growing puppies and kittens fed home-prepared diets. This is especially true for large and giant breed puppies, who have a more narrow range of acceptable dietary calcium and phosphorus concentrations. Because of the narrow margin of error and the potential risk of lifelong repercussions, home-cooked diets for animals that have not yet reached skeletal maturity (at least 12 months of age), that are pregnant, or that are lactating should only be recommended when strictly medically necessary. However, once a dog or cat is at least one year of age or has completed lactation, a nutritionally-balanced home-cooked diet is an acceptable alternative.

Obesity

Logistically, properly balanced home-cooked diets tend to be difficult to feed to weight loss patients due to their constantly changing energy and nutrient requirements during weight loss. Unlike with commercial diets, the amounts fed of home-cooked diets cannot be as easily adjusted without altering the nutrient profile due to the multiple ingredients and supplements required. Using a veterinary therapeutic diet that is formulated to be nutrient (but not calorie) dense for active weight loss is recommended. However, once a pet reaches ideal or goal body weight, a nutritionally-balanced home-cooked diet can be an acceptable alternative.

ADDRESSING COMMON MYTHS AND CONTROVERIES IN PET FOODS

Ingredients

This is usually the most surprising piece of information that pet owners hear when nutritionists describe how they determine high quality pet foods. Pets require nutrients, not ingredients. A diet full of great sounding ingredients can be less nutritious than a diet containing ingredients that are currently marketed as negative (usually without evidence). Further, some manufacturers may add ingredients to diets solely for marketing purposes, to increase the appeal of the diet to consumers. These ingredients may not have proven benefits, be present in minuscule amounts, and/or provide nothing to the diet but added expense. Unless a pet has a specific allergy determined by a dietary feeding trial, or there is a potentially toxic ingredient in the pet food (garlic, onions, etc.), then an ingredient list is not generally used for selecting a diet.

Marketing and advertising

There is a lot of misinformation and myths about pet nutrition circulating in commercials, ads, and even on pet food bags themselves. No company is allowed to say their food 'cures' or 'treats' any disease without proper drug testing (as prescription medications require). Any company with claims like that may be in violation of these terms. However, companies can imply this with softer language, such as 'promotes healthy teeth' or 'supports urinary health.' Be cautious to not take these claims as truth – always ask companies how they decided their food provides that benefit (see more information below regarding 'red flags'). Our gold standard is that a company has done clinical trials in cats or dogs, shown a positive benefit, and then published those results in peer-reviewed journals. This way, other experts will anonymously review their study to ensure it was designed properly and results communicated accurately.

No' diets

Another common aspect of marketing is when companies promote their foods by saying they have 'no ____', implying that whatever is not in their diet must be bad for your pet and is likely in other competitor foods. This is very misleading and confusing to owners. One example of this is companies promoting their diets by saying they contain 'no grains' or are 'grain-free.' This can be very confusing to owners because there have not been any studies to show that diets without grains are better for pets than those with grains. Physiologically, both cats and dogs can do well on diets with moderate amounts of protein, fat, and carbohydrates (including grains), and there is no evidence that grains are harmful nor that they are more likely to cause allergies than other ingredients. This is unfortunately a very common marketing tool that companies can use to position their products over others without evidence.

SELECTING THE RIGHT COMMERCIAL PET FOOD

So, what is the best pet food? The answer is always: 'it depends!' There is no best diet, despite all the marketing claims to the contrary. Every pet is unique and the goal is to find the best diet for the individual pet. Expense doesn't necessarily equal quality. There are some inexpensive diets that have years of rigorous scientific testing behind them and some very expensive diets that are lacking in vital nutrients or based on unsound science.

Some minimum criteria from WSAVA guidelines include:

1. Selecting a food that is made by a responsible company
2. Selecting a food that is quality control tested
3. Evaluating the label for AAFCO statements that are appropriate
4. Evaluating if there are any 'red flags' such as unsubstantiated health claims

Responsible companies

There is a very wide spectrum when it comes to the nutritional expertise of the many companies that currently manufacture pet food. The ones with the best quality are not necessarily the ones that are the most expensive or who have the best marketing! The information to help decipher a quality company often comes from calling and asking a few pointed questions (these are based on the WSAVA Nutrition Toolkit Recommendations for selecting a diet).

Some examples include:

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.
 - Additionally, asking full-time employment is important as companies can purchase a one-time recipe from a nutritionist, but then do not have their expertise on hand to ensure ongoing quality throughout production.
2. What are the qualifications of the person who formulates their food (if it's not the nutritionist)?
 - This expert should have the same qualifications stated above.

Quality control

Larger companies may have more resources to provide stringent quality control protocols and employ expert nutritionists and food scientists. Smaller manufacturers with less resources may perform less laboratory testing and may be less likely to employ full time veterinary nutritionists. For example, one study looking at thiamine deficiency in a variety of commercially available foods showed smaller companies were more likely to have lower thiamine levels than larger companies. None of this information should be assumed, however, and therefore owners should call companies and ask about quality control methods and testing done on the pet foods being manufactured.

Some examples include:

1. Does the manufacturer own the plant(s) where their food is manufactured?
 - Many smaller companies do not have the resources to own their own plants which can reduce the control they have over quality.
2. 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.
 - 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.

Appropriate AAFCO statements

Every food (but not treats) should have an AAFCO statement that describes if the food is complete and balanced and what lifestage the food is appropriate for. These statements will tell you three things:

1. Is this food complete and balanced?
 - If not, it will say (often in very small print) “this product is intended for intermittent or supplemental feeding only.” This means it does NOT have all the essential nutrients a healthy pet needs.
2. How did the company determine the food was complete and balanced?
 - Companies can either do non-invasive feeding trials or perform an analysis of their product to determine the food is complete and balanced.
 - Feeding trials will state “Animal feeding tests using AAFCO procedures substantiate that ____ food provides complete and balanced nutrition...”
 - Nutritional analysis only will state “____ food is formulated to meet AAFCO nutrient profiles...”
 - Feeding trials ensure pets have eaten this food and done well, but ideally, companies have tested their foods by both methods to ensure it is safe for pets.
3. What lifestage does this diet provide complete and balanced for?
 - AAFCO provides nutrient profiles and feeding trial requirements for growth, reproduction, and adult maintenance. (Note: there are NO senior guidelines!)
 - Foods that say all life stages must meet minimum levels of both growth and adult.
 - Since 2017, there is a new additional requirement for notation on foods for growth that specify whether the food is appropriate for large breed dogs (those expected to be 70 lbs or larger at mature weight).

Red flags

Companies that make claims about benefits of their product without evidence from peer-reviewed studies should be avoided. Likewise, does the manufacturer bash other pet food companies in their advertisements or on their websites? Look for companies that promote why their product is high quality using evidence from studies, as opposed to focusing on the (often misapplied) negative traits of others. Furthermore, companies may display a lack of nutritional knowledge, such as promoting onion or garlic in their food, which can be toxic to pets in large amounts.

COMMUNICATION TIPS FOR TALKING WITH OWNERS ABOUT DIETS

Unfortunately there is no ‘100% safe guarantee’ on any diet as there is still so much more we need to know and understand about optimal nutrition for our companion animals. Pet owners can easily and understandably be very frustrated and confused by contradicting information and advice. Utilizing a ‘follow the evidence’ communication style allows for recommendations to change as more information and studies are made known and also allows for more of a ‘team approach’ with pet owners that highlights the most important aspect and common goal – what’s best for their pet. One example conversation starter could be, “There are no good or bad foods, just foods I have more information on so I have a higher level of comfort feeding this to my own pets because I know what testing has been done. A food without as much testing is not ‘bad,’ it is just an unknown because further testing has not been done. My job as a veterinarian is to make sure you know about the various levels of testing and expertise a company can or should have so you can make the most-informed decision for your pet.’

REFERENCES

1. Stockman J, Fascetti AJ, Kass PH, Larsen JA. Evaluation of recipes of home-prepared maintenance diets for dogs. *J Am Vet Med Assoc.* 2013;242(11):1500-1505.
2. Johnson LN, Linder DE, Heinze CR, Kehs RL, Freeman LM. Evaluation of owner experiences and adherence to home-cooked diet recipes for dogs. *J Small Anim Pract.* 2016;57(1):23-27.
3. Freeman L, Becvarova I, Cave N, MacKay C, Nguyen P, Rama B, Takashima G, Tiffin R, van Beukelen P, Yathiraj S; WSAVA Nutritional Assessment Guidelines Task Force. WSAVA Nutritional Assessment Guidelines. *Compend Contin Educ Vet.* 2011;33(8):E1-9.
4. Markovich J.E., Freeman L.M., Heinze C.R. Analysis of thiamine concentrations in commercial canned foods formulated for cats. *J. Am. Vet. Med. Assoc.* 2014;244:175–179. doi: 10.2460/javma.244.2.175.

GENERAL PET NUTRITION RESOURCES

American College of Veterinary Nutrition (ACVN) Website: www.acvn.org

Resources for pet owners, veterinarians, and a listing of all board-certified veterinary nutritionists who consult with owners and can formulate home-cooked diets.

World Small Animal Veterinary Association Nutrition Toolkit: www.wsava.org/nutrition-toolkit

Note that this site has resources for pet owners and for veterinarians on pet nutrition topics.

Tufts Clinical Nutrition Service Petfoodology Website: www.petfoodology.org

University website created by board-certified veterinary nutritionists with frequently updated articles on pet nutrition.