

Interpreting Dog Food Labels: What You Need to Know

By Julie A. Roos, DVM

Your trainer has one feeding recommendation, your best friend another, and your veterinarian a third. There are so many different dog foods available now, where do you even begin? You are officially overwhelmed. What is best for your dog? Do you make your choice by price, ingredients, or protein content? This article is designed to give you basic information about interpreting dog food labels, so you can determine what is best to feed your canine athlete.



AAFCO Statements

Pet foods and treats are regulated by both federal (Food and Drug Administration Center for Veterinary Medicine) and state agencies (usually the state's Department of Agriculture). These agencies are not to be confused with the Association of American Feed Control Officials (AAFCO). AAFCO is a separate group of government officials that establishes a variety of guidelines for the pet food industry. Among these guidelines are the standards for what constitutes a "complete and balanced" diet and what must be on a pet food label.

Foods can be labeled as "complete and balanced" by undergoing a nutritional analysis or by doing a feeding trial. A nutritional analysis is a biochemical profile analyzing the food. A feeding trial is where the diet is fed to a limited number of dogs for a set period of time to determine if there are deficiencies. Ideally manufacturers would do feeding trials on all their foods, but this is typically done only by the larger companies. Depending on whether the manufacturer does a nutritional analysis or feeding trial will dictate which AAFCO statement is placed on the food (see statements on the right). This is admittedly a less-than-perfect system. A nutritional analysis alone can be misleading since even shoe leather can be analyzed for protein content. Feeding trials are done with a very small number of dogs, which can make the information of limited use. At best the

AAFCO recommendations are a starting point for understanding what a pet food label can and cannot tell you.

"This diet is formulated to meet the nutritional levels established by the Association of American Feed Control Officials (AAFCO) Dog Food Nutrient Profiles for all lifestages" OR "This diet is guaranteed nutritionally complete and balanced for all stages of a dog's life by using animal feeding trial procedures established by the Association of American Feed Control Officials (AAFCO)"

Ingredients List

AAFCO closely regulates how foods are listed on the label. So the way the food is labeled can give you information about how much of a certain ingredient is added. Ingredients are listed in order by decreasing amount, with theoretically the first ingredients being present in the highest quantity. But be careful as manufacturers have some labeling tricks that can be a bit misleading. If a label says for example "Beef" then it has to be at least 70% of the total product, but if it says "Beef Dinner" then it only has to be 25% of the

total product. If the label says “with Beef” then there is a minimum of 3% of the total product that has to be met with beef products. If it says “Beef flavor” then there can be less than 3% beef in the total product as long as the manufacturer can prove it tastes like beef. Another trick food companies like to employ is separating out ingredients. Foods like whole grain corn, corn meal, and corn gluten meal are all technically corn, but by listing them separately they can be moved down the ingredient list making it seem like corn is a less significant ingredient in that particular diet. Also some food companies add trendy ingredients like glucosamine for joint health or blueberries for antioxidants. Amounts of these ingredients are often negligible and a marketing ploy since there may not be enough of the listed ingredient to be helpful on a biochemical level. If a company is adding a significant amount of a nutraceutical like glucosamine then the bag should also list how many milligrams per unit of measure are present.

Digestibility

It makes sense that a high-quality diet is essential for performance dogs; however, quality can be difficult to determine from just reading dog food bags. Digestibility can give you a clue about quality. Digestibility is defined as how well your dog’s system can break down and use the nutrients in the food. Protein quality generally goes hand in hand with digestibility; the higher the quality of the protein, the more digestible the food. In general you should look for animal based proteins (muscle, organ meat, and so on) over plant-based proteins (soybean meal, and so on). Some manufacturers do digestibility studies where the food is analyzed before it is fed

and the stool is collected and analyzed afterward to determine what percent was digested. You can call the manufacturer for this information if needed. You can do your own unscientific digestibility studies by looking at the volume of stool produced from one diet compared to another. Generally, the more stool produced, the less digestible the diet. High digestibility is not always desirable in some cases. Talk to your veterinarian if your dog has any underlying medical conditions that may affect his digestion.

Guaranteed Analysis

AAFCO regulations also state that the guaranteed analysis is required to be on the pet food label. The guaranteed analysis determines that certain nutritional minimums and maximums are met by the food. It is critical to understand that the guaranteed analysis, also called the “as fed” basis, is *not* helpful in comparing foods. You must convert the given information to a *dry matter basis* to compare foods. This is very important and cannot be overstated. But don’t worry; the math is simple and straightforward. The guaranteed analysis tells how much of a given type of ingredient is present by weight (in percentages) and it includes moisture. Diets vary greatly in how much moisture they contain. Converting to a dry matter basis eliminates the moisture variability. Here is where it can get a little confusing. It is important to compare foods on a dry matter basis to determine the nutritional content of one food versus another. However, if you are trying to feed a certain amount of protein or fat, for example, you also have to consider the volume of food that needs to be fed, which once again includes the moisture.

Get increased range of motion & flexibility... Get increased muscle tone & endurance...

Get on the
Ball *two!*



The advertisement features a large image of a tan dog running in a grassy field. In the bottom right corner, there is a product cover for 'Get on the Ball two!' by Dr. Debbie Cross Saunders. The cover shows a white dog standing on a blue exercise ball. The text on the cover includes 'Get on the Ball two!', 'Improve Your Dog's Core Strength, Balance, Flexibility, and Endurance', and a small inset image of a black and white dog. The Clean Run logo and website URL are at the bottom left.

Converting the Guaranteed Analysis into Dry Matter Basis

1. Add up the given percentages from the guaranteed analysis, then subtract from 100.

This remaining percentage is a rough estimate of the carbohydrate portion of the food. Depending on the food label this may also include the ash or vitamin and mineral content of the food. Generally we do not worry about this since it is such a small percentage of the overall food.

Sample Label—Omit the minerals listed and total the given percentages for protein, fat, fiber, and moisture: $29 + 16 + 9.6 + 7.8 = 62.4$. Subtract the result from 100: $100 - 62.40 = 37.6\%$ carbohydrates

2. Take the moisture content from the guaranteed analysis and subtract from 100. This is the percentage of dry matter in the food overall.

Sample label—Subtract the moisture content from 100:
 $100 - 7.8 = 92.2\%$ dry matter

3. To convert the protein, fat, fiber, and carbohydrate (calculated in step 1) guaranteed analysis to dry matter basis, take the guaranteed analysis percentage of each category and divide by the overall percentage of dry matter that you calculated in step 2, then multiply by 100. You now have the percentage of that category on a dry matter basis.

Sample label—Protein on a dry matter basis: $29 \div 92.2 = 31.45\%$; fat on a dry matter basis: $16 \div 92.2 = 17.35\%$; fiber on a dry matter basis: $9.6 \div 92.2 = 10.41\%$; and carbohydrates on a dry matter basis: $37.6 \div 92.2 = 40.78\%$.

Sample Label

Crude Protein	minimum 29.0%	
Crude Fat	minimum 16.0%	
Crude Fiber	maximum 9.6%	
Moisture	minimum 7.8%	
Calcium	minimum 1.6%	maximum 1.8%
Phosphorus	minimum 1.0%	maximum 1.2%
Sodium	minimum 0.5%	maximum 0.56%
Magnesium	minimum 0.18%	maximum 0.21%
Folic Acid	minimum 1.6 mg/kg	

Often owners ask about what percentage of the diet should be protein or fat. It is hard to make a specific recommendation since there is so much variation in the needs of individual athletes. Generally the recommendation for healthy agility dogs without underlying medical issues is 30-35% protein, 35-45% fat, and 10-15% carbohydrates and 3-7% fiber on a dry matter basis (see the chart for examples of ingredients in each category). These are only general guidelines and some dogs have nutritional needs that are outside these parameters. Ultimately looking at your dog's appearance and performance can help you determine if the diet you are feeding is adequate.

Examples of Different Food Categories

The following is not intended to be an all-inclusive list of possible dog food ingredients; it simply provides some examples of ingredients in each category.

Protein Sources	Fats	Carbohydrates	Fiber
Muscle Meat	Animal sources	Corn	Beet pulp
Organ Meat	Corn oil	Rice	Tomato pomace
Eggs	Flaxseed oil	Wheat	Barley
Soy products	Safflower oil	Potatoes	Oat bran
Fish	Soybean oil	Oats	Soybean hulls
Brewer's yeast	Vegetable oils	Flaxseed	Apple pomace
Wheat germ	Sunflower oil	Pearled barley	Cellulose

There's No One Perfect Diet

Breed, activity level, metabolism, season, and genetics all play a significant role in determining which diet is best for an individual dog. Many people assume that because their dog is doing agility that they need a specialized performance diet. There are some elite canine athletes in the agility world that do need specialized diets, but the reality is that most agility dogs will do fine on a high-quality maintenance diet.

Maintaining ideal body weight is critical for optimal performance. Some people want to calculate caloric requirements for their dogs and you certainly can do it, but that is beyond the scope of this

Comparison Chart

It is *not* the intent of this article endorse or condemn any food, but rather to teach you how to compare different dog foods (whether kibble, canned, or raw) on an "apples to apples" basis. The foods included in the chart below were chosen for illustrative purposes only.

Note that the protein levels of these foods all look very different when looking at the guaranteed analysis from the product label; however, when you compare the foods on a dry matter basis, they are more similar. Again, this emphasizes the point that you must convert the given information on dog food labels to a dry matter basis to really compare foods.

	Wellness Core: Original (dry)	Wellness Chicken & Sweet Potato (can)	Purina ONE: Chicken & Rice (dry)	Purina ONE: Chicken & Brown Rice Entrée (can)	Orijen: Adult (dry)	Taste of the Wild: Wetlands Formula w/ Roasted Fowl (dry)	Primal: Raw Canine Beef Formula
Guaranteed Analysis (%)							
Crude Protein (min)	34	8	26	8	40	32	15
Crude Fat (min)	14	5	16	7	16	18	12
Crude Fiber (max)	4	1	3	1.5	2.5	4	1
Moisture (max)	10	78	12	78	10	10	66
Ash (if listed)	3.4	-	3.2	-	-	-	-
Carbohydrates (rough estimate)	34.6	8	39.8	5.5	31.5	36	6
Dry Matter Basis (%)							
Protein	37	36	29	36	44	35	44
Fat	15	22	18	31	17	20	35
Fiber	4	4	3	6	2	4	2
Carbohydrates	38	36	44	25	35	40	17
Metabolizable Energy (Kcal/cup)	430 kcal/cup	445 kcal/12.5 oz. can	449 kcal/cup	449 kcal/13 oz. can	450 kcal/cup	375 kcal/cup	1239 kcal/16 oz.
AAFCO Feeding Trial Performed	no	no	yes	yes	no	yes	no
Digestibility Studies Performed	Yes, 83%	Not done on canned	No	No	Unknown	Yes, 86%	No

It makes sense that a high-quality diet is essential for performance dogs; however, quality can be difficult to determine from just reading dog food bags.

Purina Body Condition System

Too Thin

- 1 – Ribs, lumbar vertebrae, pelvic bones and all bony prominences evident from a distance. No discernible body fat. Obvious loss of muscle mass.
- 2 – Ribs, lumbar vertebrae and pelvic bones easily visible. No palpable fat. Some evidence of other bony prominence. Minimal loss of muscle mass.
- 3 – Ribs easily palpated and may be visible with no palpable fat. Tops of lumbar vertebrae visible. Pelvic bones becoming prominent. Obvious waist.



Ideal

- 4 – Ribs easily palpable, with minimal fat covering. Waist easily noted, viewed from above. Abdominal tuck evident.
- 5 – Ribs palpable without excess fat covering. Waist observed behind ribs when viewed from above. Abdomen tucked up when viewed.



Too Heavy

- 6 – Ribs palpable with slight excess fat covering. Waist is discernible viewed from above but is not prominent. Abdominal tuck apparent.
- 7 – Ribs palpable with difficulty; heavy fat cover. Noticeable fat deposits over lumbar area and base of tail. Waist absent or barely visible. Abdominal tuck may be present.
- 8 – Ribs not palpable under very heavy fat cover, or palpable only with significant pressure. Heavy fat deposits over lumbar area and base of tail. Waist absent. No abdominal tuck. Obvious abdominal distension may be present.
- 9 – Massive fat deposits over thorax, spine and base of tail. Waist and abdominal tuck absent. Fat deposits on neck and limbs. Obvious abdominal distention.



Courtesy of Nestle Purina PetCare, St. Louis, MO, USA

article. I generally recommend that people feed based on body condition score versus a specific calorie amount (see the Purina Body Condition System sidebar). Caloric requirements fluctuate and by maintaining your performance dog at a 4 to 5 out of 9 on a body condition score scale you don't have to calculate calories, just regularly check your dog's body condition score.

Frequently I see performance dogs that are too thin. Often these dogs are being fed a high-protein diet that is too low in fat. They do not have enough energy in their diet for their lifestyle and activity level. Using protein for energy is inefficient and expensive. Some of these dogs would benefit from increasing the fat in their diets since fat contains twice as much energy as protein. I also see performance dogs that are overweight and this is a simple issue of eating too many calories for their lifestyle and activity level. Again, each dog needs to be considered individually.

There are many nutritional information resources available for dog owners. There are veterinary nutritionists available to help with diet choice and diet formulations if you are making your own diets at home. You can find a veterinary nutritionist by going to the website for the American College of Veterinary Nutritionists (www.acvn.org). Talk to your regular veterinarian, look at the label on the bag, and check out the manufacturer's website or give the manufacturer a call. There are some good books about pet nutrition, such as *Performance Dog Nutrition* by Dr. Jocelynn Jacobs, which is a helpful book that covers this topic in greater depth. There are also some interesting online tools available that can help you formulate your own diets (www.balanceit.com).

Good nutrition is critical for performance dogs; however, it is far from a straightforward subject. Make sure you are comparing apples to apples. There is a lot of slick advertising surrounding pet food and the competition is fierce to get you to buy their product. Take the time to educate yourself about canine nutrition. Remember there is no one perfect diet for all dogs. If your dog is thriving on a certain diet then there may be no reason to change. The proof is in your dog's appearance and performance. 🐾

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