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INTERPRETING PET FOOD LABELS -- PART 1: GENERAL RULES

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Arguably, Americans are reading food labels and choosing products more carefully than ever before. Recent amendments to laws and FDA regulations for nutrition labeling of human foods are designed to help people make more informed food choices. Many people are extending this scrutiny to food for their pets as well, but pet foods are regulated by different rules than are foods for human consumption. Thus, in order for consumers to be able to read and understand pet food labels and enable them to make proper food choices for their pets, they must also be made aware of the rules regarding pet food labeling.

Pet food labeling is regulated at two levels. The federal regulations, enforced by the FDA's Center for Veterinary Medicine (CVM), establish standards applicable for all animal feeds: proper identification of product, net quantity statement, manufacturer's address, and proper listing of ingredients. Some States also enforce their own labeling regulations. Many of these follow the model pet food regulations established by the Association of American Feed Control Officials (AAFCO). These regulations are more specific in nature, covering aspects of labeling such as the product name, the guaranteed analysis, the nutritional adequacy statement, feeding directions, and calorie statements.

This article is divided into two parts. Part 1 will cover the rules that apply to all pet food products, but focuses on "complete and balanced" pet foods that are intended for general use in healthy animals. Part 2, which will appear in the January/February 1999 issue of the *FDA Veterinarian*, will discuss the special considerations for the labeling of products intended for special dietary circumstances, such as treats, veterinary medical foods and dietary supplements.

Product Name

The product name is the first part of the label noticed by the consumer, and can be a key factor in the consumer's decision to buy the product. For that reason, manufacturers often use fanciful names or other techniques to emphasize a particular aspect. Since many consumers purchase a product based on the presence of a specific ingredient, many product names incorporate the name of an ingredient to highlight its inclusion in the product. Consumers are often confused, however, as to how much of a named ingredient is actually in the product. The percentages of named ingredients in the total product are dictated by four AAFCO rules.

The "95 percent" rule applies to products consisting primarily of meat, poultry or fish, such as some of the canned products. They have simple names, such as "Beef for Dogs," or "Tuna Cat Food." In these examples, at least 95 percent of the product must be the named ingredient (beef or tuna, respectively), not counting the water added for processing and "condiments." Counting the added water, the named ingredient still must comprise 70 percent of the product. Since ingredient lists must be declared in the proper order of predominance by weight, "beef" or "tuna" should be the first ingredient listed, followed often by water, and then other components such as vitamins and minerals. If the name includes a combination of ingredients, such as "Chicken 'n Liver Dog Food," the two together must comprise 95 percent of the total weight. The first ingredient named in the product name must be the one of higher predominance in the product. For example, the product could not be named "Lobster and Salmon for Cats" if there is more salmon than lobster in the product. Because this rule only applies to ingredients of animal origin, ingredients that are not from a meat, poultry or fish source, such as grains and vegetables, cannot be used as a component of the 95 percent total. For example, a "Lamb and Rice Dog Food" would be misnamed unless the product was comprised of at least 95 percent lamb.

The "25 percent" or "dinner" rule applies to many canned and dry products. If the named ingredients comprise at least 25 percent of the product (not counting the water for processing), but less than 95 percent, the name must include a qualifying descriptive term, such as "Beef Dinner for Dogs." Many descriptors other than "dinner" are used, however. "Platter," "entree," "nuggets" and "formula" are just a few examples. Because, in this example, only one-quarter of the product must be beef, it would most likely be found third or fourth on the ingredient list. Since the primary ingredient is not always the named ingredient, and may in fact be an ingredient that is not desired, the ingredient list should always be checked before purchase. For example, a cat owner may have learned from his or her finicky feline to avoid buying products with fish in it, since the cat doesn't like fish. However, a "Chicken Formula Cat Food" may not always be the best choice, since some "chicken formulas" may indeed contain fish, and sometimes may contain even more fish than chicken. A quick check of the ingredient list would avert this mistake.

If more than one ingredient is included in a "dinner" name, they must total 25 percent and be listed in the same order as found on the ingredient list. Each named ingredient must be at least 3 percent of the total, too. Therefore, "Chicken n' Fish Dinner Cat Food" must have 25 percent chicken and fish combined, and at least 3 percent fish. Also, unlike the "95 percent" rule, this rule applies to all ingredients, whether of animal origin or not. For example, a "Lamb and Rice Formula for Cats" would be an acceptable name as long as the amounts of lamb and rice combined totaled 25 percent.

The "3 percent" or "with" rule was originally intended to apply only to ingredients highlighted on the principal display panel, but outside the product name, in order to allow manufacturers to point out the presence of minor ingredients that were not added in sufficient quantity to merit a "dinner" claim. For example, a "Cheese Dinner," with 25 percent cheese, would not be feasible or economical to produce, but either a "Beef Dinner for Dogs" or "Chicken Formula Cat Food" could include a side burst "with cheese" if at least 3 percent cheese is added. Recent amendments to the AAFCO model regulations now allow use of the term "with" as part of the product name, too, such as "Dog Food With Beef" or "Cat Food With Chicken." It is important to note that even a minor change in the wording of the name has a dramatic impact on the minimum amount of the named ingredient required. Sitting on the store shelf next to each other, a can of "Cat Food With Tuna" could be confused with a can of "Tuna Cat Food," but whereas the latter example must contain at least 95 percent tuna, the first needs only 3 percent. Therefore, the consumer must now be particularly astute and read labels carefully before purchase to ensure that the desired product is obtained.

Under the "flavor" rule, a specific percentage is not required, but a product must contain an amount sufficient to be able to be detected. There are specific test methods, using animals trained to prefer specific flavors, that can be used to confirm this claim. In the example of "Beef Flavor Dog Food," the word "flavor" must appear on the label in the same size, style and color as the word "beef." The corresponding ingredient may be beef, but more often it is another substance that will give the characterizing flavor, such as beef meal or beef by-products. This is different than the other rules discussed above, wherein the name of the ingredient in the product name should be the same as that declared in the ingredient list (For example, a product including "lamb meal" cannot be called a "lamb" pet food).

With respect to flavors, pet foods often contain "digests," which are materials treated with heat, enzymes and/or acids to form concentrated natural flavors. Only a small amount of a "chicken digest" is needed to produce a "Chicken Flavored Cat Food," even though no actual chicken is added. Stocks or broths are also occasionally added. Whey is often used to add a milk flavor. Often labels will bear a claim of "no artificial flavors." Actually, artificial flavors are rarely used in pet foods. The major exception to that would be artificial smoke or bacon flavors, which are added to some treats.

In this discussion on the use of ingredients in product names, it must be noted that the ultimate purpose of dog and cat foods is to supply needed nutrients, not specific ingredients. Since the nutritional requirements can be met using a wide variety of ingredients, the presence or absence of a particular ingredient doesn't need to be a driving factor. However, if one chooses to purchase a product on this basis, it is important to keep these rules in mind. In addition to scrutiny of the product name, one should also read the ingredient list to ensure that the preferred ingredient is present in a desirable amount.

Net Quantity Statement

The net quantity statement tells you how much product is in the container for what you're paying. There are many FDA regulations dictating the format, size and placement of the net quantity statement. None of these do any good if the consumer does not check the quantity statements, especially when comparing the cost of products. Today, many canned products are sold in non-standardized sizes, so even though the products look the same size, one may be a better buy. For example, a 14-ounce can of food may look identical to the one-pound can of food right next to it. Also, dry products may differ greatly in density, especially some of the "lite" products. Thus, a bag that may typically hold 40 pounds of food may only hold 35 pounds of a food that is "puffed up." Thus, a cost-per-ounce or per-pound comparison between products is always prudent.

New FDA regulations are being considered to require "dual declarations" on pet food labels (as well as other consumer goods). Currently, labels must only bear the customary "pound" or "ounce" declarations. In the future, a unit of metric measurement, such as "kilogram" or "gram" ("kg" or "g"), may also be required to appear on the label. Many pet food labels already bear both measurements.

Manufacturer's Name and Address

The "manufactured by..." statement identifies the party responsible for the quality and safety of the product and its location. If the label says "manufactured for..." or "distributed by..." the food was manufactured by an outside manufacturer, but the name on the label still designates the responsible party. Not all labels include a street address along with the city, State, and zip code, but by law, it should be listed in either a city directory or

a telephone directory. Many manufacturers also include a "800" telephone number on the label for consumer inquiries. If a consumer has a question or complaint about the product, he or she shouldn't hesitate to use this information to contact the responsible party.

Ingredient List

As mentioned above, ingredients are required to be listed in descending order of predominance by weight. The weights of ingredients are determined as they are added in the formulation, including their inherent water content. This latter fact is important when evaluating relative quantity claims, especially when ingredients of different moisture contents are compared.

For example, one pet food may list "meat" as its first ingredient, and "corn" as its second. The manufacturer doesn't hesitate to point out that its competitor lists "corn" first ("meat meal" is second), suggesting the competitor's product has less animal-source protein than its own. However, meat is very high in moisture (approximately 75 percent water). On the other hand, water and fat are removed from meat meal, so it is only 10 percent moisture (what's left is mostly protein and minerals). If we could compare both products on a dry matter basis (mathematically "remove" the water from both ingredients), one could see that the second product had more animal-source protein from meat meal than the first product had from meat, even though the ingredient list suggests otherwise.

That is not to say that the second product has more "meat" than the first, or in fact, any meat at all. Meat meal is not meat per se, since most of the fat and water have been removed by rendering. Ingredients must be listed by their "common or usual" name. Most ingredients on pet food labels have a corresponding definition in the AAFCO Official Publication. For example, "meat" is defined as the "clean flesh of slaughtered mammals and is limited to...the striate muscle...with or without the accompanying and overlying fat and the portions of the skin, sinew, nerve and blood vessels which normally accompany the flesh." This is pretty close to what most people would define as "meat," although maybe not in such terms. On the other hand, "meat meal" is "the rendered product from mammal tissues, exclusive of any added blood, hair, horn, hide trimmings, manure, stomach and rumen contents." Thus, in addition to the processing, it could also contain parts of animals one would not think of as "meat." Meat meal may not be very pleasing to think about eating yourself, even though it's probably more nutritious. Animals do not share in people's aesthetic concerns about the source and composition of their food. Regardless, the distinction must be made in the ingredient list (and in the product name). For this reason, a product containing "lamb meal" cannot be named a "Lamb Dinner."

Further down the ingredient list, the "common or usual" names become less common or usual to most consumers. The majority of ingredients with chemical-sounding names are, in fact, vitamins, minerals, or other nutrients. Other possible ingredients may include artificial colors, stabilizers, and preservatives. All should be either "Generally Recognized As Safe (GRAS)" or approved food additives for their intended uses.

If scientific data are presented that show a health risk to animals of an ingredient or additive, CVM can act to prohibit or modify its use in pet food. For example, propylene glycol was used as a humectant in soft-moist pet foods, which helps retain water and gives these products their unique texture and taste. It was affirmed Generally Recognized As Safe (GRAS) for use in human and animal food before the advent of soft-moist foods. It was known for some time that propylene glycol caused Heinz Body formation in the red blood cells of cats (small clumps of proteins seen in the cells when viewed under the microscope), but it could not be shown to cause overt anemia or other clinical effects. However, recent reports in the veterinary literature of scientifically

sound studies have shown that propylene glycol reduces the red blood cell survival time, renders red blood cells more susceptible to oxidative damage, and has other adverse effects in cats consuming the substance at levels found in soft-moist food. In light of this new data, CVM amended the regulations to expressly prohibit the use of propylene glycol in cat foods.

Another pet food additive of some controversy is ethoxyquin. Ethoxyquin was approved as a food additive over thirty-five years ago for use as an antioxidant chemical preservative in animal feeds. Approximately ten years ago, CVM began receiving reports from dog owners attributing the presence of ethoxyquin in the dog food with a myriad of adverse effects, such as allergic reactions, skin problems, major organ failure, behavior problems, and cancer. However, there was a paucity of available scientific data to support these contentions, or to show other adverse effects in dogs at levels approved for use in dog foods. More recent studies by the manufacturer of ethoxyquin showed a dose-dependent accumulation of a hemoglobin-related pigment in the liver, as well as increases in the levels of liver-related enzymes in the blood. Although these changes are due to ethoxyquin in the diet, the pigment is not made from ethoxyquin itself, and the health significance of these findings is unknown. More information on the utility of ethoxyquin is still needed in order for CVM to amend the maximum allowable level to below that which would cause these effects, but which still would be useful in preserving the food. To that end, more studies are being conducted to ascertain a more accurate minimum effective level of ethoxyquin in dog foods. In the interim, CVM has asked the pet food industry to voluntarily lower the maximum level of use of ethoxyquin in dog foods from 150 ppm (0.015 percent) to 75 ppm. Regardless, most pet foods that contained ethoxyquin never exceeded the lower amount, even before this recommended change.

Guaranteed Analysis

At minimum, a pet food label must state guarantees for the minimum percentages of crude protein and crude fat, and the maximum percentages of crude fiber and moisture. The "crude" term refers to the specific method of testing the product, not to the quality of the nutrient itself.

Some manufacturers include guarantees for other nutrients as well. The maximum percentage of ash (the mineral component) is often guaranteed, especially on cat foods. Cat foods commonly bear guarantees for taurine and magnesium as well. For dog foods, minimum percentage levels of calcium, phosphorus, sodium, and linoleic acid are found on some products. The company may be willing to provide additional information on particular nutrients that are not guaranteed on the label.

Guarantees are declared on an "as fed" or "as is" basis, that is, the amounts present in the product as it is found in the can or bag. This doesn't have much bearing when the guarantees of two products of similar moisture content are compared (for example, a dry dog food versus another dry dog food). However, comparing the guaranteed analyses between dry and canned products, one will note that the levels of crude protein and most other nutrients are much lower for the canned product. This can be explained by looking at the relative moisture contents. Canned foods typically contain 75-78 percent moisture, whereas dry foods contain only 10-12 percent water. To make meaningful comparisons of nutrient levels between a canned and dry product, they should be expressed on the same moisture basis.

The most accurate means of doing this is to convert the guarantees for both products to a dry matter basis. The percentage of dry matter of the product is equal to 100 percent minus the percentage of moisture guaranteed on the label. Thus, a dry food is approximately 88-90 percent dry matter, while a canned food is only about 22-25

percent dry matter. To convert a nutrient guarantee to a dry matter basis, the percent guarantee should be divided by the percentage of the dry matter, then multiplied by 100. For example, a canned food guarantees 8 percent crude protein and 75 percent moisture (or 25 percent dry matter), while a dry food contains 27 percent crude protein and 10 percent moisture (or 90 percent dry matter). Which has more protein, the dry or canned? Calculating the dry matter protein of both, the canned contains 32 percent crude protein on a dry matter basis ($8/25 \times 100 = 32$), while the dry has only 30 percent on a dry matter basis ($27/90 \times 100 = 30$). Thus, although it looks like the dry has a lot more protein just from the label, when the water is counted out, the canned actually has a little more.

This method, although the most accurate, can be cumbersome when trying to compare products at the time of purchase. Even with a calculator, comparing multiple products in the middle of a grocery or pet store aisle by this means can be time consuming and inconvenient. An easier way is to remember that the amount of dry matter in the dry food is about four times the amount in a canned product. Thus, to compare guarantees between a dry and canned food, multiply the guarantees for the canned food times four first.

It is especially important to look at the moisture guarantee for canned foods, even when comparing a canned food with another canned. Under AAFCO regulations, the maximum percentage moisture content for a pet food is 78 percent, except for products labeled as a "stew," "in sauce," "in gravy," or similar terms. The extra water gives the product the qualities needed to have the appropriate texture and fluidity. Some of these exempted products have been found to contain as much as 87.5 percent moisture. This doesn't sound like much difference until the dry matter contents are compared. For example, a product with a guarantee of 87.5 percent moisture contains 12.5 percent dry matter, only half as much as a product with a 75 percent moisture guarantee (25 percent dry matter). Although water is a "nutrient," it is virtually free and easy for the consumer to provide himself or herself, so the dry matter content of the product contains all the nutrients for which it is being purchased. Less dry matter may mean less nutrients per can, so more food may have to be fed to meet the pet's needs. Thus, in addition to price, the amount of moisture in a canned food should be considered in any purchase.

Nutritional Adequacy Statement

Any claim that a product is "complete," "balanced," "100 percent nutritious," or similarly suggests that a product is suitable for sole nourishment that is not, in fact, nutritionally adequate is a potentially unsafe product. For this reason, an AAFCO nutritional adequacy statement is one of the most important aspects of a dog or cat food label. A "complete and balanced" pet food must be substantiated for nutritional adequacy by one of two means.

The first method is for the pet food to contain ingredients formulated to provide levels of nutrients that meet an established profile. Presently, the AAFCO Dog or Cat Food Nutrient Profiles are used. Products substantiated by this method should include the words, "(Name of product) is formulated to meet the nutritional levels established by the AAFCO (Dog/Cat) Food Nutrient Profiles." This means the product contains the proper amount of protein, calcium, and other recognized essential nutrients needed to meet the needs of the healthy animal. The recommendations of the National Research Council (NRC) were once used as the basis for nutritional adequacy, but they are no longer considered valid for this purpose.

The alternative means of substantiating nutritional adequacy is for the product to be tested following the AAFCO Feeding Trial Protocols. This means that the product, or "lead" member of a "family" of products, has

been fed to dogs or cats under strict guidelines and found to provide proper nutrition. These products should bear the nutritional adequacy statement "Animal feeding tests using AAFCO procedures substantiate that (name of product) provides complete and balanced nutrition."

Regardless of the method used, the nutritional adequacy statement will also state for which life stage(s) the product is suitable, such as "for maintenance," or "for growth." A product intended "for all life stages" meets the more stringent nutritional needs for growth and reproduction. A maintenance ration will meet the needs of an adult, non-reproducing dog or cat of normal activity, but may not be sufficient for a growing, reproducing, or hard-working animal. On the other hand, an all life stages ration can be fed for maintenance. Although the higher levels of nutrients would not be harmful to the healthy adult animal, they aren't really necessary. Occasionally a product may be labeled for a more specific use or life stage, such as "senior" or for a specific size or breed. However, there is little information as to the true dietary needs of these more specific uses, and no rules governing these types of statements have been established. Thus, a "senior" diet must meet the requirements for adult maintenance, but no more.

A product that does not meet either of these methods must state that "This product is intended for intermittent or supplemental feeding only." The only exception to this is for products conspicuously identified as a "snack" or "treat," which by common understanding aren't usually fed exclusively. This regulation is to prevent a consumer from misconstruing that a product is suitable as a long-term sole source of nourishment when it is not. For example, a can of "Tuna Cat Food" may contain added vitamins and minerals to make it complete and balanced, or it may not. This additional requirement helps differentiate the two. This statement may also be found on labels for some "veterinary medical foods," which are described in detail in Part 2.

Some manufacturers may state that one method is superior to another. In truth, either method has its good and bad points. For example, the "profile" method is not as good in assessing the bioavailability of nutrients or palatability as the "feeding test" method. On the other hand, not all products that bear the "feeding test" claim are the ones actually tested. Some may be members of a "family," formulated to be nutritionally similar to the product tested. However, since these "family member" products aren't directly tested, either, they have the same potential disadvantages as the "profile" products. Regardless, both methods offer excellent assurance that the products will meet the nutritional needs of the dog or cat.

Feeding Directions

Feeding directions instruct the consumer on how much product should be offered to the animal. At minimum, they should include verbiage such as "feed ___ cups per ___ pounds of body weight daily." On some small cans, this may be all the information that can fit. However, feeding directions for other pet foods are much more elaborate, especially on dry product labels.

The feeding directions should be taken as rough guidelines, a place to start. Breed, temperament, environment, and many other factors can influence food intake. Feeding directions tend to overestimate requirements more often than underestimate them. There can be several explanations for this phenomenon. The more suspicious in nature will assume that the manufacturers simply want to sell more food. However, a more understanding explanation is that due to the wide variations in energy needs among individual animals, the manufacturers attempt to cover almost all contingencies by setting the directions for the most demanding. The best suggestion is to offer the prescribed amount at first, and then to increase or cut back as needed to maintain body weight in

adults or to achieve proper rate of gain in puppies and kittens. A nursing mother should be offered all the food she wants to eat.

Calorie Statement

Pet foods can vary greatly in calorie content, even among foods of the same type (dry, canned) and formulated for the same life stage. Feeding directions vary among manufacturers, too, so the number of calories delivered in a daily meal of one food may be quite different from another. The number of calories in a product roughly relates to the amount of fat, although varying levels of non-calorie-containing components, such as water and fiber, can throw this correlation off. Thus, the best way for consumers to compare products and determine how much to be fed is to know the calorie content. However, until recently, calorie statements were not allowed on pet food labels. New AAFCO regulations were developed to allow manufacturers to substantiate calorie content and include a voluntary statement.

If a calorie statement is made on the label, it must be expressed on a "kilocalories per kilogram" basis. Kilocalories are the same as the "Calories" consumers are used to seeing on food labels. A "kilogram" is a unit of metric measurement equal to 2.2 pounds. Manufacturers are also allowed to express the calories in familiar household units along with the required statement (for example, "per cup" or "per can"). Even without this additional information, however, consumers can make meaningful comparisons between products and pick the product best suited for their animals' needs. As with the guaranteed analysis, the calorie statement is made on an "as fed" basis, so corrections for moisture content must be made as described above. To roughly compare the caloric content values between a canned and a dry food, multiply the value for the canned food by four.

If a calorie statement does not appear on the label, the calorie content of a pet food can be roughly estimated by using values given in the guaranteed analysis. To do this, perform the following calculations:

- Step 1: Multiply the percent crude protein times 3.5 and write down the result.
- Step 2: Multiply the percent crude fat times 8.5 and write down the result.
- Step 3: Add the percentages of crude protein, crude fat, crude fiber, moisture and ash, and subtract the total from 100. This gives you the percent nitrogen-free extract (NFE), which is the carbohydrate portion.
- Step 4: Multiply the percent NFE from Step 3 times 3.5 and write down the result.
- Step 5: Add the results from Steps 1, 2, and 4, and multiply the total times 10.

Example:			
Crude protein	24%	X 3.5 =	84
Crude fat	10%	X 8.5 =	85
Crude fiber	3%		
Moisture	10%		
Ash	<u>5%</u>		
	52%		
NFE	(100-52 = 48)		
	48%	X 3.5 =	168
			total 337
Calorie content	= 337 X 10		
	= 3370 kcal/kg		

Other Label Claims

Many pet foods are labeled as "premium," and some now are "super premium" and even "ultra premium." Other products are touted as "gourmet" items. However, none of these terms have any official regulatory standing. Products labeled as premium or gourmet are not required to contain any different or higher quality ingredients, nor are they held up to any higher nutritional standards than are any other complete and balanced products.

The term "natural" is often used on pet food labels, although that term does not have an official definition either. For some human foods, it is used to denote that the product is minimally processed. No pet food meets this criterion. It could also mean that the product approximates the natural diet of the animal. Wild dogs and cats eat whole bodies of birds and small mammals. A quick purview of any pet food label will fail to disclose these ingredients. Some interpret it to be equivalent to "no artificial ingredients." However, all complete and balanced products must contain some chemically synthesized ingredients, such as vitamin supplements. Thus, some products will include the disclaimer "natural ingredients with added vitamins and minerals."

For the most part, "natural" can be construed as equivalent to a lack of artificial flavors, artificial colors, or artificial preservatives in the product. As mentioned above, artificial flavors are rarely employed anyway. Artificial colors are not really necessary, except to please the pet owner's eye. If used, they must be from approved sources, the same as for human foods. Especially for high-fat dry products, some form of preservative must be used to prevent rancidity. Natural-source preservatives, such as mixed tocopherols (a source of vitamin E), can be used in place of artificial preservatives. However, they may not be as effective.

"Natural" is not the same as "organic." The latter term refers to the conditions under which the plants were grown or animals were raised. There are no official rules governing the labeling of organic foods (for humans or pets) at this time, but the United States Department of Agriculture is developing regulations dictating what types of pesticides, fertilizers and other substances can be used in organic farming. Under this plan, a food would have to be comprised of prescribed minimum percentages of organic ingredients to be labeled with claims such as "organic" or "with organic ingredients."

Summary

Pet owners and veterinary professionals have a right to know what they are feeding their animals. The pet food label contains a wealth of information, if one knows how to read it. Do not be swayed by the many marketing gimmicks or eye-catching claims. If there is a question about the product, contact the manufacturer or ask an appropriate regulatory agency.