Timely Topics in Nutrition

Health claims for pet foods: Particulars

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The JAVMA welcomes contributions to this feature. Articles submitted for publication will be fully reviewed, with the American College of Veterinary Nutrition (ACVN) acting in an advisory capacity to the editors. Inquiries should be sent to Dr. John E. Bauer, Chairman ACVN, Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, Texas A&M University, College Station, TX 77843.

"Comparative experimentaton is the sine qua non of scientific experimental medicine; without it a physician walks at random and becomes the plaything of endless illusions."—Claude Bernard

In a previous paper, the current transition in regulation of health claims for foods, including pet foods, has been described. These products are expected to fall into 3 categories: life-stage, dietetic, and veterinary medical. In this report, likely claims and disclaimers for several types of products, together with possible assignations among the 3 categories, will be illustrated. An objective of both reports of this two-part series is to make veterinarians aware that the time is opportune to communicate with pet food manufacturers and regulatory agencies about health claims for pet foods.

Veterinary medical foods may bear the phrase "use only under the direction of a veterinarian" or similar wording; specific evidence will be required for safety and efficacy. For dietetic pet foods, evidence may be required for safety, but efficacy will probably be assumed by consensus among knowledgeable experts. For life-stage pet foods, safety and efficacy will be assumed if the product meets specified standards.

Two standards apply to life-stage products: they may comply with the Association of American Feed Control Officials (AAFCO) nutrient profiles for dogs or cats, or they may be validated by AAFCO feeding trials. A gray area has emerged, in which certain health claims are made for products that meet AAFCO standards for maintenance. These products have been designated for body weight control (not reduction) or for old age. More recently, diets likely to reduce the risk of urolithiasis in cats have qualified in this gray area as life-stage products; presumably, they meet the AAFCO criteria for maintenance and certain other criteria.

Acidic/Acidogenic Diets

The FDA has allowed labels of certain cat foods to claim "low magnesium content" and "(to) reduce urine pH to help maintain urinary tract health." Other premium cat foods may match the specified magnesium contents and urinary reactions without making these label claims, which is mainly a marketing decision.

The health implications of the claims are that these dietary measures are accepted, by consensus to be effective in dissolving struvite in urine. The older claim of "low ash" is not allowed because it no longer achieves a consensus of efficacy. Dietetic products considered effective by consensus must be demonstrated, by evidence, to be safe, but the evidence required to establish safety has not been disclosed publicly.

Presumably, safe acidogenic products are less extreme than struvolytic cat foods that have induced adverse effects. Some effects of acidic urine were predictable, such as an increase in urate and oxalate stones. Other adverse effects of these diets were unexpected, such as taurine-responsive cardiomyopathy and potassium-responsive polymyositis. Any association of these diets with external health problems remains to be determined. The FDA is considering how such claims may be structured for approval.

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*AAFCO has no permanent address. Its documents are available from the Treasurer, Charles P. Frank, Georgia Department of Agriculture, Atlanta, GA 30334.

Lambert E. Pet Food Institute counsel, expressed a need for the FDA to better define claims for such products (Petfood Industry 1993;35(6):35).

odontoclastic resorption (tooth neck lesions) in cats may be difficult to establish epidemiologically, but an analogy has been provided by the association between acidic baby foods and dental caries.

Chronic acidosis is likely to reduce metabolic efficiency, retard growth, and impair reproduction, and the milder the acidosis, the more insidious its effects. In my opinion, the presumably broad conditions for which an acidic/acidogenic food has been demonstrated as safe, along with any specific contraindications, should be stipulated on the label of any acidic/acidogenic cat food available without a prescription (ie, life-stage or dietetic food).

**Protein and Phosphorus Restriction**

Blood concentrations of urea, hence presumably uremic toxins, and inorganic phosphate, hence parathyroid hormone, depend partly on dietary intake and partly on renal function. As renal function fails, dietary intake could be curtailed, with the objective of reducing accumulation of toxins.

For dogs with chronic renal failure, efficacy and safety of moderate-, rather than low-, protein diets have been established. Moderate-protein dog foods (protein content, 24 to 31% of metabolizable energy [ME]) have been demonstrated to be beneficial, compared with high- or low-protein products, and to have no adverse effects. In contrast, low-protein products (<17% of ME) have performed better than very low (<13% of ME) or very high protein foods (>40% of ME), but not better than moderate-protein diets, in mitigating the course of chronic renal failure.

Certain low-protein dietary products have induced adverse effects in dogs: protein deficiency and metabolic acidosis, reduced renal function that mimics failure, and hypercholesterolemia and hypertension. With certain low-protein products, inconsistency of improvement in appetite, anemia, azotemia, hyperphosphatemia, and hyper-parathyroidism also have been problematic.

In several studies, an advantage for marginal or low phosphorus content (<0.5% dry matter) over abundant phosphorus (>1.0% dry matter) has been suggested. An exception was the improved metabolic and clinical response of dogs in chronic renal failure to a diet containing a combination of moderate protein and abundant phosphorus than to a low-protein, low-phosphorus product; in that study, protein appeared more important than phosphorus.

Critical appraisal of the literature suggests that moderate-protein products are safe and consistently effective, especially when associated with marginal or low phosphorus content, and hence are candidates for consensus as dietetic products. In contrast, trials of lower-protein products have been inconsistent; hence, each product of this kind may need to be demonstrated safe and effective, and to be restricted for use under the supervision of a veterinarian.

**Energy and Protein Restriction**

Low-protein and low-energy density have been features of pet foods for older dogs. The low-protein feature is based on data from rats and is contrary to results of relevant studies in dogs. The low-energy feature suits the 25% of older dogs that are overweight, but not the 20% that are underweight.

With advancing age, increasing variation in body condition and many functions require attention in older dogs. Nevertheless, special products for all older dogs enjoy life-stage status at present, and precedence may allow this status to remain. Protein utilization is less efficient in older dogs than in young adult dogs; some studies suggest that a lower limit of protein, equivalent to 19% of the ME of casein, be established for diets for apparently healthy older dogs. The range would be wide, from about 24% for meat-based products up to about 30% for predominantly plant sources of protein. Labels for low-energy diets (<3.5 kcal/g of dry matter) should warn against their use for underweight dogs, irrespective of age.

Typical low-protein, low-energy products for older dogs may be readily modified for thinner older dogs by mixing with high-energy products. These may be either high in protein (stress diets and puppy foods) for healthier older dogs, or moderate-low in protein (kidney diets) for those with premonitory signs of renal failure.

**Low-Energy, High-Fiber Diets**

Low-energy density also is a feature of weight reduction diets. This feature is achieved in most foods by inclusion of insoluble fiber, and in a few by inclusion of soluble fiber. Insoluble fiber consists mainly of plant cell walls and is composed mainly of lignin, cellulose, and some hemicelluloses. It is represented on the label as crude fiber. Higher contents are progressively unpalatable and poorly digested, and have been proposed to have a satiating effect via gastric distention. This hypothesis was not supported by results of a study in which consumption of a challenge meal, a measure of appetite, was not affected by 6 diets with a range of dietary fiber from 6.6 to 14.3% dry matter.

A feeling of fullness associated with residue from insoluble fiber has been commonly suggested to reduce begging in dogs. This behavioral trait seems also subject to external cues; for example, our 7 dogs beg from me, but not from my wife (P = 0.016, Wilcoxon’s sign test).

Doubling the insoluble fiber in a pet food approximately doubles fecal output, which is a drawback for owners in communities that require cleaning up after your dog and for everybody in those that do not. Insoluble fiber has a potential adverse effect on bioavailabilities of trace elements, such as zinc, which should be evaluated in pet foods intended for long-term use.
Soluble fiber is composed of hemicelluloses, mucilages, gums, and pectin, and binds water. So far, weight-reduction products based on soluble fiber have been canned, with about an 80% water content. These products are highly palatable (like gelatin dessert). Rapid consumption fills the stomach and ends the meal. Digestibility remains high, and bioavailabilities of trace elements should not be impaired. Controlled studies are needed to compare the effects of soluble and insoluble fibers on feeding behavior and bioavailabilities of certain minerals.

In regard to efficacy, rate of weight loss is higher in claims for insoluble fiber products than for soluble fiber products.\textsuperscript{24} Rapid weight loss, though recommended by one manufacturer,\textsuperscript{18,24} is probably a disadvantage in terms of loss of tissue protein, hence strength and immune competence. More attention should be given to retaining strength and health through exercise and gradual weight loss, and to stabilization of the desired weight.\textsuperscript{25}

Products intended to affect body weight might be placed in any of the 3 pet food categories. Those products that control weight and reduce the risk of obesity may be considered life-stage products if they also meet the requirements for maintenance. Products designed for weight reduction may be classified as dietetic if safety has been adequately demonstrated. Products designed for rapid weight reduction should, in my view, be used only under the direction of a veterinarian. Injudicious weight reduction might compromise the management of diabetes mellitus, hypothyroidism, hyperadrenocorticism, ascites (eg, in heartworm disease), and pyometra, and other diseases. Such conditions should be ruled out or addressed professionally before the start of a weight reduction program. Otherwise, if weight-control and loss products continue to be allowed life-stage/dietetic status, more medical information may be needed on the label.

**Low-Sodium Diets**

Low-sodium pet foods have an implied claim for reduction of accumulated body water, as in chronic heart disease.\textsuperscript{18} At first consideration, efficacy by consensus, hence dietetic status, seems appropriate. Low-sodium diets might be contraindicated, however, in the early stages of chronic heart failure, when an expanded extracellular fluid volume may help the failing heart. If so, timing of this intervention is important,\textsuperscript{26} and these products should be reserved for medical status—use under the supervision of a veterinarian. Moreover, diets intended for use with digitalis and diuretics should probably have more than minimal amounts of magnesium and potassium to avoid digitalis intoxication and potassium depletion.

**Digestant Diets**

Claims for aiding digestive function are made for certain pet foods. Some have high digestibility through low fiber and ash. Others have a moderate amount of certain fibers, low in lignin, to optimize motility and fermentative digestion.\textsuperscript{22,27} Both types are widely used, apparently effectively and safely.

The efficacy and safety of digestant diets, however, depends on the circumstances, and in many cases, timing. Judgment of a veterinarian thus would be necessary for proper use. Yet demonstrating efficacy and safety in a controlled clinical trial, given the huge variation in digestive disturbances (eg, the several etiologic types of diarrhea), might be financially prohibitive for pet food manufacturers and might unreasonably deny these useful products to sick animals. Thus, digestant formulas appeal as dietetic, rather than medical, diets.

**Hypoallergenic Diets**

Elimination diets used for the diagnosis and management of food allergies are made of safe ingredients that are simply unusual in a population, or preferably, that contain no allergen for which an individual has had positive test results.\textsuperscript{28} Many owners seem to think that a scratching animal is a sufficient cue for a hypoallergenic diet; in my experience, sales are increasing for lamb and rice products in the United States, and for chicken and rice in the United Kingdom. More certainly effective and expensive hypoallergenic products would be protein-free, containing amino acids and oligo-peptides.\textsuperscript{29}

Safety seems ensured for hypoallergenic diets. Efficacy, however, will depend on differential diagnosis, with careful testing for allergens.\textsuperscript{28} Availability to the public must be weighed against the advantage of keeping alleged allergy avoidance and affected animals under the supervision of a veterinarian.

**Stress Diets**

Stress is a condition that has distinctive nutritional requirements and, as such, is akin to a disease. In developing stress diets for racing sled dogs, anemia was used as a criterion for a protein requirement of 32% of ME.\textsuperscript{30} Ironically, products intended to keep healthy dogs robust and competitive will probably be classified as veterinary medical pet foods, requiring demonstration of safety and efficacy, if qualified by the word “stress,” which connotes disease to the FDA.

**Role of the Veterinarian**

The examples in this report were included to promote critical interest, rather than to classify any type of pet food in a regulatory category on the basis of nutrient composition and health claims. Collectively, they suggest that owners might benefit from 2 label statements: “recommended for use under the direction of a veterinarian” for dietetic products, in contrast to “required to be used only under the supervision of a veterinarian” for veterinary medical pet foods.
The introduction of pet foods with health claims in 1948 enabled a major advance in the quality of small animal practice. A comparable advance is being made possible by genuine competition, which started about 1990, in this market. Real progress, however, will depend on practitioners thinking critically about the uses, merits, and limitations of various types of dietary formulas, as well as demanding comparative trials of pet foods subject to health claims.

References