

Canine Nutrition

by Alfred J. Plechner, DVM

TODAY'S DOG FOOD is becoming less and less acceptable. Considering the 30-year nutritional lag period represented by most modern dog foods and the overbreeding that has occurred during this same period, trying to manufacture an up-to-date, nutritionally adequate dog food is a little like a "foot race to futility."

Unfortunately, the theme of today's dog food market is often not what food is best to feed, but rather what food will cause the least amount of problems. A few years ago, feeding a dog from the family table was considered to be absolutely wrong, but compared with most current available manufactured dog foods, it might not be a bad idea. Because of a combination of inbreeding (or improper overbreeding) and inadequately designed dog food formulations, food-related disease is common.

Improper diets in certain breeds cause extensive disease. In many instances certain foods either can cause an entire disease or a portion of the disease. I believe that certain foods in some inbred dogs are responsible for at least 30% of the skin disorders that I examine daily. Trace mineral deficiency also is involved. Therefore, it is vital to identify a food-related disease not only to correct the disease process but to help enhance routine medical therapy with classical drugs. If a food-related disease is overlooked, other means of therapy usually are unsatisfactory.

FOOD-RELATED DISEASES

The most commonly diagnosed food disorders are those dealing with either a gastrointestinal upset (upset stomach and/or intestines) or a dermatitis (skin disease). More subtle diseases can range from a minor behavioral change to a severe epileptic seizure. I think that many non-specific liver, kidney and pancreatic diseases relate to food and trace mineral problems.

My clinical research suggests that most food disorders are primarily or secondarily related to an imbalance in the mucous membrane antibody IgA. This particular antibody is responsible for first-line defense of the mucous membrane of the mouth, eyes, gut, lungs and urinary tract. If the cellular production of this antibody is either too high or too low, disease results. Ingesting food into a dog that has this imbalance can cause a disease involving any and all segments where the IgA is produced in abnormal amounts. Often associated with this antibody imbalance are other imbalances in endocrine-immune regulation.

Secondary food and trace mineral imbalance can occur because of an inherited inability to break down and utilize certain foods, especially protein. This imbalance occurs because of an inherited or acquired loss of the pancreatic enzyme trypsin. This imbalance is identified easily and corrected through stool analysis by a veterinarian.

FOOD INGREDIENTS

Many dog food ingredients are harvested from overworked incompletely supplemented agricultural soils. Because of the absence of certain micronutrients essential to life, food-related disease may occur. Trace min-

erals are necessary not only as certain co-enzymes in specific physiological reactions in the body, but to help fund specific enzymatic reactions in the gut which allow for uptake and utilization of many foods and vitamins. Therefore, trace mineral deficiency can lead to secondary food-related disorders.

What kinds of dog food ingredients can be identified as major, frequent offenders? The following foods commonly are listed: beef, wheat, wheat germ, wheat germ oil, corn, corn oil, peas, beans, nuts, eggs, milk, milk products, fish, shellfish, processed fish, fish oils, chocolate, fresh fruit, tomatoes, grapes, pineapple, mushrooms, yeast, yeast-containing foods, B vitamins, spices and additives used in food preparation. Certain foods also may contain non-specific histamine-releasing substances such as crustaceans and drugs. Also, any food when moldy, contaminated or inundated with preservatives can cause disease.

ALLERGENS

In discussing food disease, it is important to recognize the different forms in which one food allergen might exist. Often, I ask a client *not* to feed beef to his dog. He exclaims, "I do not feed beef, I only feed kibble." What foods, then, contain beef? How about raw meat in dry food, therefore in biscuits and kibble; in raw and cooked bones, such as bone meal, rawhide chew sticks or chips, as a meat powder, meat sauce; in organs (heart, liver, spleen, pancreas, kidney, etc.) — all beef. Other subtleties you must consider in investigating beef products include certain replacement medications containing allergens. If beef insulin is given to a beef-allergic dog, the results might be disastrous. If a dog that is hypothyroid is given thyroid tablets, the dog experiences a severe allergic reaction. The thyroid supplement is desiccated beef thyroid. Oddly enough, after a full year of sitting on a pharmacy shelf, the thyroid loses its potency as far as its thyroxin but its beef allergy effect may last for years.

Coat additives and vitamin supplements often have substances that are allergenic, i.e. lecithin. If the lecithin is refined from a beef product and is used as a health substance in a beef-allergic dog, disaster occurs. Therefore, you must force yourself to think in a different parameter and ask not only how much of the food product is present, but also where the product originated.

TRACE MINERALS

The presence or absence of certain micronutrients also can cause a number of diseases. A minimum of 23 essential trace minerals are necessary for human life. We probably can assume that many of these trace minerals also are essential for dogs. In certain ways, this is a rather new area of medical research, but in other respects, man has realized the need for micronutrients for hundreds of years. Trace minerals are such elements as iron, calcium and potassium that even in small amounts are essential to fund many of the biological cycles supporting life.

If you then consider the probable certainty of trace mineral deficiency in dog foods, it becomes important to add chelated trace minerals to most dog foods. In a

chelated form, only those minerals needed by the dog will be absorbed. Even dogs with cardiac problems need a certain amount of sodium chloride, but in a chelated form, only the necessary amount will be absorbed.

Remember, as with your own diet, no matter how healthy the food ingredients are (organically grown), they only can be as good as their parent soil. Therefore, if the soil is imbalanced, so will be the food product. These micronutrients lead not only to deficiency and toxicity diseases but also create a loss of proper funding of certain specific enzymatic reactions occurring in the gut. These definitely can lead to a loss of uptake and utilization of necessary nutrients.

IDENTIFICATION

How can you identify a food allergy? A careful history plus an open mind are essential. A food allergy may occur within a few weeks of age or as late as 10 to 12 years of age. There certainly are dogs that develop food allergies so early in life that inherited food allergy sensitivity must be suspected with an associated IgA antibody imbalance. Other dogs acquire a food allergy after a number of years of exposure to the same food. Breeds that appear to be predisposed to inheriting food allergies should not be exposed as puppies to classic food allergens. It is a general misconception that the new dog food is usually the cause of the food allergy. Actually the food sensitivity occurs only after a given time of exposure to the *old* food.

New foods with improper formulations and/or improper processing can mimic a food allergy. Generally, a food allergy is chronic. Therefore, by reviewing the history, you may find that the disorder has occurred more than once. To try to identify a food-related disorder in a dog may be difficult, but I believe that many more food-related diseases and trace mineral imbalances exist than ever imagined.

What methods are available to identify these food allergies? The most common method is food elimination, meaning that all foods are considered guilty until proven innocent. Stop all foods and either feed a complete non-meat formulation with trace elements, or feed a lamb-based trace mineral food. Note: Lamb is the least allergenic of all meats, not only because it has a less stimulatory molecular structure, but also because fewer dogs in this country have been exposed to lamb. If, after feeding a less allergenic diet and no other segments of the allergy environment have been changed (except food), and the clinical signs of the dog's disease disappear or lessen, it is reasonable to assume that the dog has a food related disorder.

In certain instances, all food may be withheld for three to four days to see if the disease improves. This certainly is a little extreme in my opinion since current thinking suggests that food allergens may remain in a dog's system and cause disease up to 21 days.

Skin testing (injecting certain food substances directly into the skin) falls quite short diagnostically, cause once the allergenic food is ingested, broken down and cleaved by the gut enzymes, the specific allergenic compound at best is difficult to identify.

NEW TESTS

The above methods relate to the dog's classic immune cells, the lymphocytes. A new method has been developed to identify food sensitivities and appears to be quite promising. These tests involve a different cell than the lymphocyte, a neutrophil. This method called cytotoxic testing, first was developed in humans. It was found that by ingesting certain foods a predictable toxic reaction could be observed in the patient's neutrophil. This test has been adapted for use in dogs and cats. The test is done simply by taking a blood sample, spinning down the white blood cells and then exposing these cells to various prepared food allergens that have been placed on a glass slide. Through the use of a microscope, the toxic reactions that occur in the white blood cells are graded from one to four, with four being the most severe. The test appears to be 85% accurate, but if the dog has not been eating certain specific food allergens within the past nine-month period, there is a good chance that its neutrophil will not react. Even though negative on the cytotoxic test, if the dog's lymphocytes are sensitive, a severe allergic reaction may occur.

Often accompanying a dog's food allergy is an increase in a peripheral blood cell, eosinophil. It is thought that this cell is associated with the release of histamine. That may occur secondary to ingestion of certain food allergens. If this is the case, a veterinarian can identify this cellular phenomenon and then start the dog on a non-meat trace mineral diet or lamb-based trace mineral diet. After seven days, the dog's blood should be checked again for eosinophils. If the eosinophil count has dropped, food allergy must be considered.

It is obvious that no method of detecting food allergies is 100% accurate. When many of these methods are used in conjunction with common sense, however, the food-related disease can be identified. It also is just as important to realize that diagnosis and treatment of food-related diseases is in its infancy, even though some of the methods discussed above have been used for years. This is a creative area of medicine that is vital to a dog's health. It is important to rule out food-related and trace mineral disorders before moving on to more exotic areas of medicine. Otherwise, if a food or trace mineral-related disease is missed, the patient will be treated for naught, forever. □

Alfred J. Plechner, DVM, is a graduate of the University of California at Davis in 1966. His veterinary clinical studies over the past 15 years have been related to the tolerance in dogs and cats and the ability or inability to use modern diets.

Dr. Plechner's efforts have been directed toward identifying various genetic endocrinology-immunology imbalances that have led to an inability of dogs and cats to tolerate their environment with particular intolerance of today's diets.

Since these specific imbalances now are identifiable, they are preventable through testing of prospective parents.

Dr. Plechner's special interests include clinical allergy, endocrinology and immunology.

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