# Nutrition: The Foundation of Quality Care

At the Veterinary Wellness Center, we place great emphasis on the importance of excellent nutrition. We recognize that modern diagnostic tools, pharmaceutical medicine, and surgical procedures can be very helpful in managing certain disease processes. However, we know that nutrition can not only serve to prevent diseases but also to cure certain disease processes, help to enhance the body's responses to medications, reduce the adverse effects of some medications, and speed healing time after surgeries. Therefore, since nutrition is fundamental to health and healing, it must be the foundation of quality patient care.

There are two fundamental models, or paradigms, for viewing nutrition in pets. The most common model for understanding nutrition is that of the "complete and balanced" diet. This model assumes complete knowledge of nutrition and is promoted by nutritionists (the 'experts') and pet food manufacturers.

The other model, which we believe at the Veterinary Wellness Center, is based on an understanding and appreciation of the value of fresh, whole, or raw foods and relies on natural sources of naturally-occurring substances to feed the body according to design. This paradigm recognizes the immense chemical complexity inherent in foods and the complexity of the body's functions and responses to foods. It also recognizes the currently limited understanding of food/nutrition. Therefore, our nutritional recommendations are often contrary to conventional nutritional 'wisdom' and utilize fresh foods and numerous nutritional supplements, rather than commercial 'prescription' diets. To fully appreciate this contrarian view of nutrition, it is important to look closely at the underlying assumptions and misunderstandings concerning typical commercial pet foods and conventional nutritional 'wisdom'.

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# The Myth of "Complete and Balanced" Pet Foods

Typical commercial pet foods are produced with several objectives in mind. They need to be relatively inexpensive, convenient to use, and reasonably nutritious by meeting minimum standards for adequacy. There are a myriad of pet foods available at a wide range of prices – all claiming to be "complete and balanced". But what is meant by "complete and balanced"? The automatic assumption that most veterinarians and pet-owners make is that these pet foods are all truly "complete" diets and they contain all the nutrients necessary for optimal health. If we accept the premise that the nutrition in a particular dog food is 100% complete and balanced, then we would never consider the possibility that a nutritional deficiency is at the root of a clinical problem, nor would we consider a nutritional supplement to be of any value. Yet, at the Veterinary Wellness Center, we often see patients' conditions improve with nutritional supplementation or alterations in diet, even when they have been eating a "complete" food.

Nutritional science itself is not a completed science. Therefore, nutritionists do not know enough about nutrition to make claims of "completeness". There are ample evidences to show that we are constantly gaining new insights that yield "improved" pet food formulations. We then may wonder: if the last food was "complete", but it is now "improved", is it now truly "complete" or are more "improvements" yet to be discovered? More veterinarians and clients are beginning to ask questions such as these, and to question the concept that a highly processed food (high heat and pressure), with a long, stable shelf-life, is able to provide ideal nutrition for their patients and pets[*].

Then, there is the question concerning fresh fruits and vegetables. Humans are encouraged to consume five 'servings' per day. It is reasonable to ask: Are dogs or cats so different from humans that they derive no benefit from fresh vegetable or fruit in the diet? Are there answers to these questions and do we know what is the optimal diet for dogs and cats?

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[*] Dr. Royal Lee, founder of Standard Process, speaking about a similar situation with human nutrition 1943: "*We have drifted into this deplorable position of national malnutrition quite inadvertently. It is the result of scientific research with the objective of finding the best ways to create foods that are non-perishable, that can be made by mass-production methods in central factories, and distributed so cheaply that they can sweep all local competition from the market. Then, after there develops a suspicion that these 'foods' are inadequate to support life, modern advertising science steps in to propagandize the people into believing that there is nothing wrong with them, that they are products of scientific research intended to offer a food that is the last word in nutritive value, and the confused public is totally unable to arrive at any conclusion of fact, and continues to blindly buy the rubbish that is killing them off years ahead of their time.*"

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# Essential Assumptions

When analyzing pet food company claims and trying to determine whether to provide dietary supplementation, it very useful to consider some of the basic underlying assumptions of the pet food industry and how they derive their definition of "complete".

The first concept that needs defined is '***nutritional essentiality***'. Formulation of commercial pet foods is founded on '***nutritional essentiality***': Foods considered 'adequate' or 'complete' are only required to contain '*essential*' nutrients in amounts that meet estimated needs. Essential nutrients are discovered by experimentally feeding a diet deficient in a particular nutrient and watching for typical signs of disease caused by deficiency of that nutrient. If there is clinical disease induced, then that nutrient is considered "essential". When other nutrients experimentally excluded from the diet, do not cause any deficiency disease signs, they are not considered "essential", nor are they considered to be truly 'nutrients'. In order to formulate a "complete" diet, the food companies need only include those nutrients defined as 'essential'. So, while it is legally permissible to claim 'completeness', it is not truthful because many other substances, which it is assumed that pets do not *need*, have been left out of the food. Many of these left-out substances, such as the thousands of phytochemicals, have been shown to have powerful beneficial effects on the function of the cells of the body, even though specific deficiency syndromes have not been identified when they are temporarily excluded from the diet.

The second aspect of commercial pet food production to understand is the role of American Association of Feed Control Officials (AAFCO) standards, and their limitations. In order for a pet food to receive the AAFCO approved label, it must contain recommended levels of required nutrients. Current nutrient requirements were developed by the AAFCO canine and feline nutrition expert subcommittees.[i] However, it is important to note that AAFCO "*protocols are not intended to ensure optimal growth or maximize physical activity*"[ii]. A pet food can be deemed adequate by one of two methods: Either by meeting a nutritional profile (the formulation or analysis method) or through feeding trials (the protocol method). Even with the superiority of an actual feeding trial, the trial is only 6 months long, requires only eight animals, and would be inadequate to reveal long-term deficiencies or excesses because the effects of chronic long term imbalances may not be seen for years.[iii]

In the November 15, 1993 Journal of the American Veterinary Medical Association, in an article entitled "Changes and Challenges in Feline Nutrition", several nutritional experts were quoted concerning pet foods and deficiencies (Smith 1993). Commenting on the AAFCO nutrient analysis method, Dr. David A. Dzanis, veterinary nutritionist in the FDA's Center for Veterinary Medicine, said, *"**The formulation method does not account for palatability or availability of nutrients**. **Yet a feeding trial can miss some chronic deficiencies or toxicities**."*[iv]

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Dr. Quinton Rogers, professor of physiological chemistry at University of California, Davis, said, "*Although* ***the AAFCO profiles are better than nothing, they provide false security. I don't know of any studies showing their adequacies or inadequacies****. We have performed between 40 and 50 protocols in the past 10 years and have found several foods that passed the NRC or AAFCO analysis profile but failed our feeding trials. Usually the problem related to nutrient bioavailability. We also have done generational studies wherein we leave animals on the same food for 3 to 5 generations****. Some foods that pass the feeding trials still won't support animals over the long term."*** Dr. Rogers estimated that of 100 foods that passed the AAFCO analysis criteria, 10-20% would not pass the feeding trials and of those that did pass the feeding trials, 10% would not be adequate for long term feeding. Dr. Rogers also said*, "****Because there is no way to tell which foods these are****, I recommend that foods are changed periodically during an animal's lifetime…Cats that eat one food their whole lives are more likely to suffer from nutrient excesses as well as deficiencies."*[v]

In the same article, Dr. Tony Buffington, professor of clinical sciences at The Ohio State University said, "*The recommendation to feed one food for the life of an animal gives nutritionists more credit than we deserve. Cats fed one diet usually remain healthy. But, when a problem arises, a fairly consistent finding is that the animal was fed one thing for a long time."*[vi]

These comments serve to illustrate that the current understanding of nutrition is far from perfect and that the concept of 100% complete and balanced is either wishful thinking or clever advertising. Also, nutrient deficiency or excess may only be seen with long-term or multi-generational feeding trials.

# Nutrients in Food: There is More Than Protein, Fat, Carbohydrate, Vitamins, and Minerals

*"Because of modern nutritional science, we tend to think of foods as substances containing just fats, proteins, carbohydrates, vitamins, and minerals, but the truth is that all natural foods are complex mixtures of chemical substances. For example, a food we think of as relatively simple, the potato, contains over a hundred and fifty known chemical substances and many unknown chemical substances as well. All fruits and vegetables and other natural substances are similarly complex."*[vii]

Early nutritional research, and much modern research, has been focused on finding 'active ingredients' in food and as a result has failed to recognize the chemical complexity of foods. There appears to be an underlying assumption that foods are simple mixtures of a few easily identified chemical constituents, which, through modern chemistry, can be easily reproduced. However, synthetic chemical substances often do not convey the identical health benefits as the same compound when consumed with the parent food. The naturally-occurring nutrients are more complex than can be synthesized and reproduced in the laboratory. This has been shown conclusively with beta-carotene and with vitamin E. In addition, the complex interactions of various phytochemicals and their interactions within the body continue to be overlooked and poorly understood.

This misunderstanding of the biochemical complexity of foods is illustrated by the conventional thinking (the old paradigm) regarding the ingredients in pet foods: *"The nutrient profile of a commercial pet food is important to animals and should be the primary focus rather than concern for specific ingredients"*[viii] This view emphasizes the importance of the macronutrients only – the protein, fat, and carbohydrate content, not on the **functional value of foods**. However, we know that every plant or animal product has a unique combination of chemical ingredients that make that substance unique and that can produce a unique physiologic effect. "*All natural foods contain substances which affect the structure or function of the body. Thus, all natural foods have some medicinal action, however weak it may be. In fact the only foods that do not contain these substances are refined foods like white flour and white sugar."*[ix] Therefore, each ingredient in the diet may exert specific physiologic effects or benefits beyond the mere content of proteins, fats, carbohydrates, vitamins, and minerals.

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## Conclusions

"*Food is an extremely complex matrix consisting of thousands of natural components, many of which have not been characterized.*"[x]

We recognize that food is much more complex than once thought and there are many chemical components in plant and animal tissues that have powerful, beneficial physiologic effects. Many of these compounds are not currently considered 'essential' and are therefore not included, or not quantified, in commercial pet foods. Therefore, we believe that commercial canned and dry pet foods are not "complete" and that an optimal diet will contain a wide variety of minimally processed whole foods.

There are a number of options for sources of minimally processed whole foods for pets. In some cases, home-prepared diets are the best option. There are several books listed in the Resource List that can be valuable for home-preparing diets, as well as provide insight into this 'unconventional' approach to feeding. There are also prepared frozen meat-based diets available for dogs and cats. These combine the convenience of prepared foods with the advantage of fresh, uncooked ingredients. A few of these companies are also on the Resource List.

Much of what we know to be a healthy diet of fresh, whole foods for people also applies to dogs. We have several recommendations concerning the optimal ingredients in a pet's diet, whether evaluating a commercial product or when considering ingredients for a home-prepared diet:

1. Obtain organic meats and produce when affordable and available. There is evidence of higher trace mineral content and variations in phytochemical concentrations in organically-raised produce. In addition, there are no pesticide or herbicide residues, which may be especially important in ill or dysfunctional animals.
2. We will frequently recommend raw meat and/or bones for our patients. However, it is important to use common sense when feeding raw meat and bones to a pet. Ideally, meat should be clean and fresh, or freshly thawed. Ground meat should come from a reliably clean source to minimize bacterial contamination in processing. Bones should be uncooked knuckle-bones or poultry bones which are easily chewed and may be fed whole or ground. Grinding bones before feeding decreases the possibility of problems such as a greedy dog bolting a too-large piece of bone. Caution: what many people consider to be 'marrow' bones are simply very hard and thick, fat-filled bone shafts that offer little nutritional value and may damage the teeth.
3. Grass-fed meat and dairy product sources are best because of the significant differences in essential fatty acid content compared to grain-fed. There are increased omega 3 fatty acids,

which diminish inflammation and improve immune function. Another beneficial fatty acid present only in grass-fed animals is conjugated linoleic acid (CLA). This recently discovered fatty acid has beneficial effects on immune function, decreases cancer risk, and promotes weight loss or optimized lean body mass.

4. The two primary categories of foods to avoid are:
    a. refined carbohydrates such as fructose sweeteners, sugar, and white flour products such as white bread and pasta;
    b. damaged fats, called "hydrogenated" oils or "trans" fats, which are found in most pre-packaged foods, deep-fried or high-temperature processed foods, and margarine or shortening.

In some cases, it may not be possible to feed a diet of fresh, whole foods and we may recommend one of a variety of dry kibble foods. Despite the familiar high heat and pressure processing of the meat and grain ingredients, the dry foods that we recommend have special features that offer important nutritional advantages over traditional commercial diets because they have dehydrated or freeze-dried foods, herbs, and nutrients added after the heat processing. This insures that your pet receives more of the 'good stuff' only available in un-processed foods (natural vitamin complexes, trace minerals, and naturally-occurring enzymes). And despite the advantages of these special foods, supplementation with fresh vegetables and fruits is always encouraged.

Even with these guidelines and recommendations, it is extremely difficult to feed a perfect, ideal diet. Therefore, most pets (and people) benefit from high-quality whole-food based nutritional supplements. Whole food supplements may be thought of as 'vitamins', but rather than being synthetically produced in a laboratory like a drug, they are produced from whole foods which are organically grown, harvested fresh, dried, ground, and blended. These whole-food based supplements will contain naturally-occurring whole vitamin complexes, synergistic combinations of phytochemicals, and trace minerals. These supplements supply extra food-based nutrition for the body and help to support various body systems such as endocrine glands and organs. There are several important reasons why supplementation is critical to optimal health: to provide vital factors lost during processing, increase specific nutrients and currently undiscovered beneficial chemical ingredients, manage biochemical individuality, manage periods of increased tissue stress or demand, compensate for the inherent deficiencies of commercially produced vegetables, fruits, and animal products, and to avoid the dangers of unrecognized partial or "subclinical" nutritional deficiency*.

[i] Dzanis DA 1995. The AAFCO Dog and Cat Food Nutrient Profiles, Kirk's Current Veterinary Therapy XII pp.1418-1421
[ii] Small Animal Clinical Nutrition 4th Edition 2000
[iii] Smith CA. November 15, 1993. Changes and Challenges in Feline Nutrition , J Am Vet Med Assoc Vol. 203, No. 10 pp.1395-1400
[iv] Smith CA. November 15, 1993. Changes and Challenges in Feline Nutrition , J Am Vet Med Assoc Vol. 203, No. 10 pp.1395-1400
[v] Smith CA. November 15, 1993. Changes and Challenges in Feline Nutrition , J Am Vet Med Assoc Vol. 203, No. 10 pp.1395-1400
[vi] Smith CA. November 15, 1993. Changes and Challenges in Feline Nutrition , J Am Vet Med Assoc Vol. 203, No. 10 pp.1395-1400
[vii] Peterson, M. Nutritional Herbology
[viii] Small Animal Clinical Nutrition 4th Edition 2000 p.119
[ix] Peterson, M. Nutritional Herbology
[x] Rasooly L, Rose NR. Food toxicology and immunity. Nutrition and Immunology: Principles and Practice Gershwin, German, Keen Eds. 2000

[*] Dr. Royal Lee, speaking in 1943 about partial nutrient deficiencies: "*Vitamin deficiency conditions are not found in uncomplicated syndromes that represent conditions due to the lack of a single vitamin. They are mixtures of conditions in which there are almost invariably several deficiencies operating in conjunction. To catalog these conditions and refer each symptom to a deficiency of some one vitamin has been a difficult matter. We can deprive test animals of one vitamin at a time and observe the reactions, but two things are wrong with that procedure. One is that the different species react somewhat differently to this test, and secondly* ***the action of a partial deficiency over a long period of time is unquestionably of a different nature from the effects of a complete deficiency acting over a short period of time.***"[2]