

Nutrition for Dogs

A little bit of science, and a lot of common sense

A brief history of canine nutrition

When I first began to seriously investigate nutrition for dogs and cats over 10 years ago, I was confronted with the problem of where to begin. It is fair to say that the subject had been given little consideration in scientific or veterinary literature, prior to the development of commercial pet foods some 50 years ago. Since then, it has become “big business”, and there is a wealth of biased information available, to both veterinarian, and dog owner. But what about prior to that? How did people feed dogs before tinned and dry food became available? What nutritional problems did they encounter? Who advised them on how to feed their dogs?

The answers are all quite simple. Dogs were fed fresh meat, bones, and left over table scraps. The nutritional problems encountered were very few, and simple to correct (calcium deficiency, rickets, hypervitaminosis A). Veterinary advice was limited to suggesting additional calcium in the diet for growing puppies. A majority of dogs were kept for specific purposes, i.e. working dogs, guard dogs, hunting dog's etc., and had access to a wide range of different food sources via scavenging on the job. Dogs were, in no way, as strictly limited to the confines of the back yard, as they are today. Some breeders and working dog trainers used various supplements in their dog's diets, like yeast, cod liver oil, raw eggs and garlic, to improve their dogs' fertility and performance. But on the whole, homemade diets were basic, uncomplicated, and perfectly adequate. The dogs of yesteryear enjoyed long, active, healthy lives, with few degenerative diseases.

It was during the post-war era of the 1950's and 60's, when processed foods began to gain popularity with people. Tinned and dehydrated foods of all description began to infiltrate grocery stores and fill the pantries of modern households. And riding on the back of the success of the *convenience era*, came the first processed foods for dogs.

It took nearly thirty years for the medical profession to realise that this type of nutrition was detrimental to human health, and begin to emphasise the importance of fresh food, fruit and vegetables as part of a balanced diet. Unfortunately (for dogs), the bulk of the veterinary profession is still yet to come to terms with these same health issues, and begin recommending fresh food (raw food) diets for dogs.

To fully understand the detrimental impact of commercial pet foods on the general health of dogs, we must first understand the basic principles of what dogs *should* eat. These answers can be found by tracing the evolution of dogs, and understanding how contemporary wild dogs eat.

The Truth about Dogs

The process of evolution is designed to “fine tune” every living species to best survive and reproduce in its given environment. Every structure of the living organism is affected by this process, right down to the cellular level. The process causes minute changes that accumulate over millions of years, with the end result being an organism that is ready to thrive, survive, and reproduce. Dogs are no exception. They have been evolving for 40 million years (before human intervention) existing on a natural diet of raw prey, vegetable matter, fruits, nuts, insects, and all manner of scavenged food. They are omnivores by definition, meaning they consume both meat and plant based food sources. In fact, they are the ultimate scavengers, able to exist on a purely vegetarian diet, when necessary, and thriving on a meat based diet, when available. They will eat almost anything to stay alive, and have a cast iron constitution to reflect this. A wild dogs diet can include up to sixty different ingredients in one day, varying from live prey, carrion, grass, nuts, fruits, insects, bark, soil, clay, decaying vegetable matter, animal excretions, and more. Despite the immense variation, the one common factor is that they are all consumed *raw*.

The dog’s entire digestive tract, from teeth and saliva, to organs and intestines, digestive enzymes, microbial flora, and ultimately the entire metabolic process to the cellular level, has been finely tuned, over millions of years, to be able to process, digest, and absorb the products of a *raw food diet*. The breakdown process of the raw ingredients in the intestinal tract is critical for normal assimilation of all the vitamins, minerals, proteins, fats, carbohydrates, and other metabolic factors essential for optimal growth and function.

When a dog (or dog pack) catches prey, there are well-defined eating patterns that emerge. Apart from the hierarchical order in which the dogs are allowed to participate in the feast, there is a systematic approach to consuming the various parts of the prey. The abdominal cavity is opened quickly, and the gut contents and organs (what we call offal) are consumed first. The organs, like liver, kidneys, spleen etc, are rich in vitamins, minerals, and trace elements. The gut contents, including stomach, intestines and colon, are full of semi digested plant and grain material. It is this “mush” of plant matter that the dogs devour immediately, almost like a prize to the hunter.

The remainder of the carcass, comprising mainly muscle meat and bones, is then consumed slowly, often over several days if the prey is large. If there is an abundance of meat and bone, dogs will bury some, to ensure a feed for themselves later on.

What we have learned from this, is a simple understanding of the basic ingredients in a dog’s natural diet. Apart from the vast array of scavenged material a dog may eat, when available, a diet of live prey is the ultimate in nutrition. This consisting of pre-masticated (chewed), semi digested plant material and grains, a serving of rich organ meats, and a larger portion of muscle meat and bone.

So what does this mean with regard to dog nutrition? It is certainly clear that dogs are best adapted to eating their food raw, but does cooking a dog's food really make that much difference? The message became very clear when pet food manufacturers first began making processed pet food.

Cooking creates deficiencies

The process of cooking food is unique to humans. We are the only living species to have harnessed fire, and used it to modify our natural food sources. Cooking is the oldest and simplest form of preserving food. The process of heating destroys the natural enzymes in food, and microbial content, thus preventing the natural process of decay. Unfortunately, it is not limited to just enzymes and microbes, it also destroys natural vitamins, essential fatty acids, amino acids and proteins, and renders many minerals unavailable for absorption from the gut.

These problems became very evident in the early stages of pet food manufacture. Severe, and sometimes fatal, deficiencies were quickly identified. Deficiencies of Vitamins A, D, E, B1, and several essential amino acids were discovered in early tinned pet foods. Most of these were overcome by adding large amounts of synthetic vitamins and amino acids to the original ingredients, to overcome the levels that were destroyed by the cooking process. Modern processed dog foods have advanced a long way in nutritional science, and have overcome many more problems along the way. But there is still a range of subtle deficiencies that cannot, and never will be, overcome in cooked pet foods.

Man has been domesticating animals for thousands of years, for use as food, for transport, and as companions. Food animals have always held an important position, and animal husbandry techniques (the care of animals for growth and reproduction) have always placed supreme emphasis on correct nutrition.

The basic understanding of how to feed an animal for maximum growth, development and reproduction has come from observing the animal in its natural state (in the wild), and trying to reproduce the same environment in the domestic situation (same types of feed, grasses, foliage etc). Due to the enormous economic importance of cattle and sheep, there has been intensive and ongoing research into nutrition for these animals. We possess a total understanding of the importance of soil types, mineral content, plant growth, and ultimately the physiology of the cow or sheep, eating the grass, and turning that into fleece, milk, or meat. In the veterinary field we have identified a myriad of mineral deficiencies, or toxicities, that affect health, and a vast array of diseases that can be easily corrected using mineral supplements and salt licks, or with simple dietary changes. Much of the work in this area is actually a direct result of the unnatural effects of domestication and modern farming practices on domesticated animals. I may be exaggerating if I said there had been 10% as much research on canine nutrition, with very little information on the effects of long term dietary deficiency. This may reflect a lower economic value placed on dogs' health, but it also reflects a lack of necessity in the past to perform this type of research. The majority of

deficiency syndromes in dogs, that have been adequately researched, are as a direct result of the commercial pet food industry, and the nutritional problems they created when they first began cooking pet food.

The major flaw in modern canine nutritional research is that it has focused on the immediate effects of nutrition. Deficiencies that create an obvious short term, readily identifiable problem in health, have been extensively studied, and corrected. But long term, subtle, non-life-threatening deficiencies have not been investigated in much detail. The effects over an animal's life span, the altered absorptive capabilities of older dogs, the accumulation of years of low-grade deficiency, have not been addressed by nutritional research. It is these types of deficiencies that are creating the enormous "epidemic" of long-term degenerative diseases that afflict modern dogs. Chronic skin diseases and allergies, osteoarthritis, dental problems, autoimmune diseases, and ultimately cancer, can all be linked to long term deficiency.

There are over 76 macro and micro minerals available in natural raw foods. Modern nutritional research has focused on studying only the importance of the major groups, the ones that show an immediate short-term health disorder if deficient. This comprises only 30% of known nutrients. In fact even the most premium brand pet foods are lucky to contain 50 of the 76 nutrients available. Some cheaper pet foods may only have 30-40. It is the damage caused by cooking and artificial processing of modern pet foods that creates these deficiencies (rendering minerals unavailable for absorption from the gut), and results in subtle disease syndromes that accumulate and worsen over an animal's life -span. The average dog will maintain reasonable health on commercial pet foods for about 5-6 years, but it is the next half of its life where the problems will become evident. Allergic skin disease and early onset arthritis are the two most common syndromes (omega 3 fatty acid deficiency, calcium deficiency). The more basic and cheaper pet food brands will result in signs of deficiency much sooner. A dull, dry, flaky coat, itchy skin, poor dental health, blocked anal glands, obesity, diabetes, hypothyroidism, irritable bowel syndrome, and a range of degenerative conditions which were previously only diagnosed in people, are just a few of the disease syndromes that can be linked to long term dietary deficiency.

And for all the complexities of these deficiencies, for which I can claim to understand only a few, the answer to correcting them is so simple. A well balanced, raw food diet.

Raw food is the answer

A well-designed diet of raw food can provide all the available macro and micronutrients necessary for perfect health. The easy part, is that because it has not been cooked or processed, it supplies all the nutrients in an easy to digest and absorb form. You do not need to be a rocket scientist to formulate a well-balanced raw food diet. The aim is to match the natural components of a wild dog's diet. A generous portion of muscle meat and raw bones, some organ meats (liver, kidney, heart), and a balance of carbohydrate and vegetable matter, equivalent to the gut contents of the prey.

In general, it is easiest to use readily available ingredients, like rolled oats for carbohydrate, flaxseed meal or oil for omega 3 fatty acids, and plenty of green vegetables. There are some simple additives you can use to fortify the diet, and fill any gaps that would normally be supplied by a dog's natural scavenging habits. Brewers yeast, kelp, lecithin, calcium, garlic, vitamin C, and powdered barley grass or wheat grass, can all be added to the diet to create a fully balanced, nutritional masterpiece. Using organic meats like kangaroo and rabbit will further enhance the nutritional profile, and purity of the diet.

Raw bones should be a daily part of the feeding program for puppies, as they are the natural source of calcium for growth. Raw bones should also be fed to all mature dogs at least 2-4 times weekly. Remove the marrow if feeding them to overweight dogs. Vegetable matter should be pulped or vitamised, to aid digestion, and prevent fussy dogs from avoiding eating them. Increase the vegetable component for overweight dogs. Try adding a clove or two of garlic to the vegetable mix, and soak it in some chicken stock overnight. Cereal grains, like rolled oats, should be soaked in an equal volume of water, or stock, for 24 hours at room temperature, before mixing with the rest of the ingredients. This will greatly enhance the digestibility and bioavailability of the grain content.

And there you have it. A simple, nutritionally complete, raw food diet, that will provide your dog with the complete array of nutritional building blocks, vitamins, minerals, and trace elements, required for perfect health and a long, happy, and active life.

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