

Raw Food Diets: Fact versus Fiction

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Introduction

It is generally accepted that dogs were domesticated from wolves; the period of this evolution ranges from 10,000-135,000 years ago. Accordingly, some recent DNA research shows that this occurred in stages in different areas, not all dogs breeds came from the same wolf or from the same geographic area.¹ The primary ancestor of the domestic cat is believed to be the African wild cat, *Felis libyca*. Domestication started for cats much later than it did for dogs, ~8,000 years ago with full domestication taking place only 4,000 years ago.² The time difference is reflective in what these animals were domesticated for, dogs were hunters, cats were vermin killers on the farms. As we evolved from a hunting society to a farming society, our needs changed also.

With this history in mind, we need to look at what food these animals have consumed since they joined us in our homes. Dogs did not continue to hunt and eat raw foods once domesticated; they primarily ate our leftovers and scraps. Since we have not consumed a raw food diet since fire was discovered, our dogs did not eat raw food either. Since cats were domesticated for their ability to control small vermin, they have continued to eat a raw food diet for a much longer period of time.

Myth: Raw food diets are nutritionally superior to processed diets, and is "what nature intended dogs and cats to eat".

There is no scientific evidence showing that raw food diets are nutritionally superior to processed foods. All processed foods are required to conform to AAFCO (American Association of Feed Control Officials) standards for sale in the United States. These standards can be met in one of two ways. The food can be "formulated" to meet AAFCO standards, or feeding trials can be done. Feeding trials are the preferred method of substantiating AAFCO certification.⁵ This takes into account not only nutrient content, but nutrient loss due to processing and digestibility.

Raw food diets overall are not marketed as "complete and balanced" and therefore not need to meet AAFCO standards. Some of the frozen diets however are marketed as "complete and balanced" and have AAFCO statements on the labels, but have not undergone feeding trials. The claim is that these diets are "complete and balanced" over a period of time, but not for each meal. There are three main types of raw food diets.

- Commercially available complete raw food diets.
 - These diets are intended to be complete and balanced without the need for additional supplements. They are typically sold in frozen form.
- Homemade complete raw food diets, many recipes for homemade raw food diets are available in books, article and on the Internet.
 - These diets expect the owner to balance the diets out in the long term as each meal is not in itself balanced.

- Combination diets.
 - These consist of commercially available mixes of grains and supplements. This mix is in turn combined with raw meat.⁴

Granted, raw food diets may be nutritionally superior to some commercially processed foods. Those would be the poor quality foods that have not gone through feeding trials, use lower grade ingredients, and have high cereal contents. Feeding any premium quality food would show an improvement just due to the increased quality of the ingredients used.

Since raw food diets have not gone through feeding trials, it is difficult to know if they are nutritionally balanced or not. One study has been done looking at the nutrient content of a variety of raw food diets, both home prepared and commercially available. None of the diets studied were balanced, and all had nutrient deficiencies or excesses. These deficiencies and excesses may have been balanced out in the long term, but this is not guaranteed.⁴

Pet food manufacturers know what changes occur with their foods with the various processing methods, and supplement as needed to maintain optimum nutrient levels. As with any science, we continue to discover every day new ways to use diet to modulate various disease or conditions--and the manufacturers continue to change and improve their foods.

Myth: Domesticated species tolerate bacterial contamination in food without problems, even if they are pediatric, geriatric, or critically ill animals.

There is not scientific evidence to support this claim, and in fact three studies have found either bacterial contamination in the food or dishes, or death related to pathogenic bacteria directly related to the diet being fed.^{4,5,6}

The study looking at nutrient content of the diets also looked at microbial analyses. One of the five diets yielded growth of *E. coli* 0157:H7.⁴ This strain of *E. coli* has been connected to *E. coli* infection in people, and is one of the more pathogenic strains.

Another study presented in JAAHA reported two cats presenting for necropsy that died from septic Salmonellosis. In one of the cases it was directly traced back to the raw food diet fed. The two cases were 9 months apart in presentation, but from the same household. Healthy adult cats appear to have high immunological resistance to the development of clinical Salmonellosis. Cats that are immune compromised or otherwise ill would be at increased risk of infection due to contaminated food stuffs.⁵

Animals that are not sick themselves can also pose a public health concern due to shedding of bacteria into the environment. There are a number of bacteria that can be found on raw meat and transmitted to animals and subsequently to their owners or others in contact with the animal or their stool.

20-25% of poultry carcasses intended for human consumption test positive for *Salmonella* organisms, the raw meat used for feeding dogs is even more frequently contaminated. Most raw poultry is also contaminated with *Campylobacter* species, primarily *Campylobacter jejuni*, so food borne infection is highly probable for dogs fed raw chicken.

Shiga toxic *Escherichia coli* strains are routinely isolated from fresh ground hamburger. *Escherichia coli* 0157 has been identified in dog feces.

Yersinia enterocolitica, can frequently be isolated from raw meat, especially pork. As much as 89% of the commercially available raw meats may be contaminated with this organism.

Numerous food-borne parasitic infections can also affect dogs and cats. Feeding raw fish can result in infection with a variety of organisms including *Diphyllbothrium latum*, the fish tapeworm; *Opisthorchis tenuicollis*, a trematode that infects the bile duct, pancreatic ducts and small intestines; *Dioctophyme renale*, the giant kidney worm; and *Nanophyetus salmincola*, the vector for *Neorickettsia helminthoeca*, the agent responsible for salmon poisoning in dogs.⁶

Dogs routinely fed raw meat are commonly infected with the protozoan *Sarcocystis* spp., and infected dogs may excrete sporocysts in their feces and contaminate the environment. Dogs can become infected with *Toxocara canis* and with the raccoon ascarid, *Baylisascaris procyonis* as a result of eating raw meat. Infected dogs can develop enteritis and shed infective eggs into the environment. In humans these two parasites cause visceral larval migrans. Dogs are also susceptible to infection with *Trichinella spiralis* whose larvae are found encysted in meat. Undercooked or raw pork is occasionally contaminated with this parasite.⁶

Myth: Raw food diets improve the health of their pets.

The primary claim from raw food proponents is that this diet improves the health of their pets. While this is fairly nebulous and hard to prove, very few medical conditions can be directly traced back to nutrition.

On average a wolf in the wild only survives to 8 years old, wolves in captivity can survive up to 16 years. Most deaths are attributed to predation, disease and starvation. As Darwin showed us, life in the wild is survival of the fittest. An animal with many of the diseases we treat for commonly in small animal medicine would not survive in the wild. That, to our pets would be the benefit of domestication. Until fairly recently, we did not have the medical knowledge to treat these conditions either, but as human medicine progresses, so does veterinary medicine.

It would be presumptuous to think that the conditions that we see and treat our cats and dogs for do not exist in the wild, and that this is solely due to the diet they consume. Furthermore, what would be the hunting ability of many of our current breeds? Could a Persian administer a cervical bite to a mouse, or is their breeding induced malocclusion too severe to do this? What are the chances that a Yorkie would be able to catch and kill anything to eat, and considering the variety of foreign objects that a Labrador eats, would it be able to find the right food to kill and eat?

Myth: Uncooked food is more easily digested because it contains enzymes that cooking destroys.

Some nutrients are destroyed by heat, but not all heat-sensitive nutrients are eliminated during cooking. This is dependent on what the nutrient content of the food was initially and how the food is processed, stored and cooked.⁷

Heat can also affect proteins. Proteins can be "denatured". Their physical and chemical properties can be changed or altered. This happens with egg whites when they are cooked, the albumin becomes denatured and easier for the body to digest. Some proteins in meat also exist as enzymes, proponents of raw food diets contend that these enzymes become inactive when the meat is cooked. These proteins would also become inactive in the stomach when they meet up with the digestive enzymes. There are also other enzymes that are resistant to digestion (digestive enzymes) and may or may not be affected by stomach acid or heat from cooking. For the enzymes that are affected by heat, there is little evidence to suggest that they are more beneficial to animals that eat them raw.⁷

Due to the cellulose layer found in all plant based compounds, digestibility of these nutrients is difficult until the cellulose layer is broken down. This can be accomplished either through chewing, grinding of the food or cooking. Plant based materials are the primary source of carbohydrates for the body; these carbohydrates in turn are used for glucose production. If insufficient carbohydrates are available for energy, the body can also use glucogenic amino acids or glycerol from fats. If adequate dietary carbohydrates are not available, amino acids will be directed away from muscle growth, fetal growth and milk production to be used for glucose production.³

As carbohydrates are heated or cooked with water the starch contained within the cells undergoes a process called gelatinization. The greater the degree of gelatinization, the greater the degree of digestibility. The central nervous system and the red blood cells required glucose for their energy needs. Glucose consumed in excess of energy needs can be stored as glycogen. After glycogen stores are filled, any extra carbohydrates are converted into long-chain fatty acids and stored as fat.³

Conclusion

Since feeding trials have not been done on the majority of raw food diets, their nutrient content, digestibility and supplementation levels are for the most part unknown. By using raw meats, clients are leaving their pets and themselves open to bacterial and parasitic infection from possibly tainted meats. And there is no guarantee of improved health, what are the options in treating these pets?

First and foremost, do not ostracize these clients; most people opting to feed a raw food diet are conscientious owners looking to do the best thing for their pets. They, unfortunately, do not have a nutritionist in the kitchens. Most importantly, try to get them to cook the food being fed to their pet--this will at least address the bacterial and parasitic problems. Find out what they don't like about commercially available diets, if they are misinformed on any issues gently guide them in the right direction. If clients insist on continuing to feed raw food diets, or homemade cooked diets, recommend 2-4 yearly visits for complete physical exams and blood screens to detect any problems before they become severe.

References

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