

## **Vet corner**

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Pet food additives: Why are they added to dog food? How safe are they? Did you know that the practice of adding chemicals to foods began thousands of years ago? The addition of flavouring agents, spices, and preservatives such as salt and sugar were often necessary to make the food both edible and safe to eat. The legal sanctioning of food additives in commercially prepared foods began in 1920, and has since become common in both human and animal foods. Food additives are substances purposely added to foods to provide a desirable characteristic: such as colour, flavour, texture, stability, or resistance to spoilage. The words preservative and additive are often used interchangeably, but they are really very different. Preservatives are substances added to foods to slow down decay, discolouration, or spoilage under normal use or storage. So, all preservatives are additives, but not all additives are preservatives! There are several different categories of preservatives such as antioxidants, antimicrobials and other preservatives to enhance food colour. Manufacturers use various additives during the production of pet foods to generate a product that looks good, maintains its nutritional quality, tastes good and has a long shelf life. Some additives, especially colours, only enhance the appearance of the product to the human owners and are not necessary to preserve the wholesomeness of the food for your pet. Pet food additives must conform to the requirements of applicable regulations in the Code of Federal Regulations for food additives or as ingredients generally recognized as safe.

Nutrient enrichment with vitamins and minerals is the most important additive used in commercial pet foods. Most dogs and cats receive all of their nourishment from commercial pet foods. As a result these foods are designed to be completely balanced in the essential nutrients required for the life stage of the pet they are made to feed. Most of the ingredients with unfamiliar, chemical-sounding names are nutrients. In general, additives other than vitamins and minerals are found most often or in largest amounts in dry foods, soft-moist foods, treats and snacks, and least often or in smallest amounts in canned foods. This is mainly due to the preservative effect of canning.

Most pet foods contain a large percentage of added fat which in dry foods must be stabilized with an antioxidant in order to maintain the quality of the food. Otherwise the food may develop changes in colour or flavour, losses in fat and vitamin nutritional quality and even the possible accumulation of harmful substances. Prior to the addition of antioxidants to dry pet foods, rancidity was often a problem. Antioxidants frequently used in pet foods include tocopherols, citric acid, ascorbates, ethoxyquin, propyl gallate, tertiary butylhydroquinone and butylated hydroxyanisole (BHA). If an antioxidant is used, legally it must be listed on the label.

Soft-moist foods and treats have a high moisture content, so an antimicrobial preservative is often added to prevent the growth of bacteria. Dry pet foods are resistant to spoilage by bacteria due to their low water content (6 to 10 percent). Semimoist foods have higher moisture content (25 to 50 percent) and thus must have preservatives added to reduce the availability of water to the bacteria. Propylene glycol was frequently used in the past, but has now been removed from cat foods due to the deleterious effects seen in the blood of some cats.

Several colouring agents are often added to enhance the look of the food to the animal's owner. Natural colours include carotenoids. Synthetic colours include iron oxide, tartrazine and nonazo dyes. Several other additives are not colouring agents, but prevent discolouration instead, like nitrites and ascorbate. Natural and synthetic flavours can also be added, but only if they can be recognized by the pet. In order to pass these taste tests the flavour 'usually must be one to five percent of the food.

Dry pet foods are less appetizing than products with higher water content. Manufacturers use

additives to overcome this lack of palatability. Digests are probably the most important factors used to enhance the palatability of dry foods. Digests are prepared by enzymatic degradation of animal tissues. Degradation is stopped by the addition of heat and acid, and the resulting liquid material is sprayed on the exterior of dry dog foods. Other additives such as emulsifying and thickening agents are used, especially in the gravy or sauce portion of canned pet foods. Miscellaneous additives are also used in some products. Yucca extracts are an example of an additive used as a means of reducing fecal odours.

Recently many pet foods have used the names "natural" or "nature" in the brand or product name. There is no legal definition of these terms. It is usually taken to mean a product which does not contain artificial preservatives and colours. The marketing of many "natural" pet foods and the direct attacks on synthetic antioxidants are based on the idea that pets have adverse reactions to food additives. Some additives documented to cause problems in human beings are found in pet foods. These additives include azo dyes, butylated hydroxyanisole, tartrazine, sodium nitrite, sodium bisulfite, sodium alginate, sodium glutamate, spices and guar gum. Several companies now market their pet foods as "preservative and additive free." These foods do not have antioxidants added during the manufacturing process. However, most commercial pet foods use a vitamin premix, in which the fat soluble vitamins have already been stabilized by an antioxidant. In dry pet foods, animal protein sources such as meat meal or poultry meal have also had antioxidants added during the rendering process. Therefore "natural" foods are not totally preservative free but have lower levels than most other foods.

Although food additives, particularly preservatives and dyes are frequently cited as causing adverse food reactions in dogs, especially skin or gastrointestinal signs, scientific proof is hard to find. Ethoxyquin, a synthetic antioxidant is considered by many people to be a cause of many problems seen in purebred dogs, ranging from infertility; puppy illness and death; skin and hair coat problems; immune disorders; thyroid, pancreas and liver disorders; to behavioural problems. However, the FDA has found no evidence that ethoxyquin at approved levels causes any problems in dogs. Many additives must be present in commercial pet foods. Vitamins and minerals and preservatives make pet foods healthier and safer. In order to prove that dogs get adverse reactions and allergies to additives in pet foods, much more research needs to be done.

### **BARF and other Homemade Diets Revisited**

A few issues ago I discussed the BARF (bones and raw food) diet. I concluded that if correctly prepared and fed that this diet could be a good diet. Because of the problems associated with processed commercial kibble food, many dog owners are now feeding a raw food diet. Most are based on Dr. Ian Billinghurst's book written in 1993. Now there are many different pet food companies which promote a line of raw meat pet foods or the use of raw meats supplemented with the line of dietary products they produce.

Raw food diets have been around long enough now that "we have been able to see the harm they are doing to many dogs. This has been well documented. Ann Martin, who wrote the book *Food Pets Die For* has a new book out titled *Protect Your Pet: More Shocking Facts*. It has chapters on the "Dangers of Commercial Pet Foods," "Raw Meat Diet Controversy," "Increased Cancer in Pets," and more. I urge all pet owners who are thinking of feeding their companion pets with a raw food diet to read the chapter "Raw Meat Diet Controversy" in Ann Martin's new book.

Ann is joined by many canine nutritionists, including myself, who now urge dog owners to be VERY CAREFUL about feeding raw meat to their dogs. The meat that we can buy at the store (the same meat you and I buy and cook before eating) is NOT the same as the meat that a wild carnivore eats from a natural kill. Commercial meat has been processed and exposed to many factors that make feeding it to our companion pets potentially harmful. If we could provide the same fresh raw meat that the ancestors of today's dog had access to 600,000 years ago,

including the hot fresh guts - what wild carnivores still go for first in a kill, then it MIGHT BE OK to feed them with that food source. Unfortunately, today's pet owners can't. Meat that is processed and sold through retailers may have been exposed to a number of chemical agents. These MUST be destroyed by using heat to generate temperatures that will break them down.

At his internet website Dr. Belfield states, "As a veterinary practitioner for thirty-seven years and a veterinary meat inspector for seven years, I, in good conscience, cannot recommend raw meat diets to my clients. My advice to my clients is 'cook the meat until the redness is gone.' When this is done, there is no vomiting, the cholesterol level is normal, the risk of infection by microorganisms and parasites diminishes." (A direct quote from his 1999 online article Raw Meat Diets for Companion Animals?) Any diet that gets a dog eating foods that are not filled with preservatives and other chemicals is considered by most canine nutritionists as a step in the right direction. But the raw meat diets which are on the market today fall into the same trap as the all-breed/any-breed kibble and are being sold as a "one diet GOOD for all dogs." Most companies selling their raw meat diets are promoting this type of diet with the claim that all domesticated dogs descended from the wolf. For years, scholars have debated the origins of today's domesticated dog. A direct link showing the wolf to be the sole forefather of today's domesticated dog has never been proven. The wolf may only be a distant cousin and no more related to our modern companion pet than a jackal, a fox, a dingo, or a coyote. The truth is that wild-born wolves taken into captivity are typically malnourished. Most people assume that because wild dogs don't have the opportunity to cook their food, that nature has set up the perfect diet for them. This is simply not true. We know from their carcasses that they die of splintered fowl bones and have very bad dental problems. Here is what the Director of NA W A (North American Wolf Association) has to say about this: As for the statement that raw meat is a biologically correct food, humans have survived healthfully on cooked foods for thousands of years. It is more than safe to say that diseases such as cancer are not caused by cooking your meat.

It is not just the raw meat that can cause a domesticated dog harm. Raw vegetables can also do damage. The Glycemic Index of Foods (internet website at [www.glycemic.com](http://www.glycemic.com)) shows that raw carrot can cause the pancreas to produce much more insulin than the same amount of cooked carrot. The overload of insulin will then cause the dog's liver to have problems the same as a diabetic human would experience. The Glycemic Index of Foods list over 1,000 raw and cooked meats and vegetable food sources and shows us that we MUST choose what we put into an animal's diet with care. We are seeing an increase in the number of diabetic dogs and the correlation between the growing popularity of feeding dogs a raw food diet and this disease cannot be ignored.

Another argument for not feeding today's domesticated dog a raw food diet is that we know domesticated dogs have been eating cooked food for over 300,000 years. In the Middle Pleistocene period companion pets (dogs included) were buried alongside their masters. Our present-day domesticated dogs have been eating cooked foods long enough to cause a change in their digestive and glandular systems and the way that they will react to raw food.

The issue of feeding raw meat as part (or the entirety) of a domestic dog's diet, has caused quite a stir in the veterinary community and dog industry. Conventional veterinarians have grave concerns about raw meat and bones in a dog's diet. History (and current statistics) has shown us that both wild and domestic dogs who eat raw meat and bones can and do become very ill for a number of reasons. Veterinarians across the United States have seen a significant increase in a variety of illnesses due to a raw meat diet. Some dogs become ill right away and others have severe pancreatic, kidney, heart and brain illnesses due to a long-term raw meat diet. Most dogs that die from a raw meat bones diet do not show signs of illness until a few days before it kills them. This is true with pancreatitis and with the raw chicken or turkey necks and backs that injure the stomach and intestinal area. intestinal parasites from the raw meat causing a slow death or severe illness.

Can a dog overcome illnesses on a raw meat diet? No! When an improvement in a previous condition is seen after feeding raw meat to a dog, it is more likely due to the absence of some offending agent in the food they were eating before. Some people see what they perceive to be immediate results from the BARF diet ... a shiny coat, or some type of condition has cleared up. Raw meat has a high fat content that will sometimes give a dog a shiny coat (at least initially). While coat texture can be a sign of good health, it's not a reliable measure of a dog's health. The truth is that it's NOT the element of raw meat that improves a dog's health. They would see the same results with cooked meat. Oftentimes it's simply the absence of one or more ingredient(s) in the kibble they were feeding. You could have taken your dog off their current food and put them on another commercial food, or possibly a vet-supervised homemade diet with small amounts of cooked meat, and seen an improvement in the condition - without the dangers of raw meat. Veterinary universities believe that better nutrition and veterinary care is extending the average dog's life span past what is normal, which is why we see chronic cases such as diabetes or cancer. Overbreeding has resulted in an increase of dysplasia, allergies and skin conditions. These are affected by diet, but caused by genetics (poor genealogy from over breeding and puppy mills).

Recent testing of sample diets in comparison to AAFCO nutrient standards for maintenance or growth and reproduction have been performed and published. Diets included a homemade diet being fed supposedly in accordance with The Bones and Raw Food (BARF) diet of Dr. Ian Billinghurst, a homemade diet being fed in accordance with the Ultimate Diet of Kymthy Schultze, a homemade diet being fed in accordance with the Wendy Volhard diet, a commercial diet combination grain-supplement mix mixed with raw meat and water per manufacturing instructions and a commercial "complete" frozen diet. These diets were generally found to be low in phosphorus and calcium, to have an unbalanced calcium to phosphorus ratio, were usually high in vitamin D and vitamin E (greater than AAFCO maximum), and to contain less than AAFCO minimum standards for many of the required minerals. One diet was positive for E. coli O157:H7 (the deadly one).

The numerous claims of the health benefits of raw food diets are all anecdotal. Even without considering the lack of evidence for benefits of these diets, there are a number of important concerns you should have regarding raw food diets. First there is the nutritional balance of the diets. It can be difficult to formulate a balanced homemade diet in the best of circumstances. The results of the analyses of diets have indicated that there are clearly nutritional and health risks associated with feeding raw food diets. All the diets tested had nutritional deficiencies or excesses that could cause serious health problems when used in a long-term feeding program. Of equal concern is the health risks associated with bacteria in the raw food diets, especially the homemade diet that yielded E. coli O157:H7. Although owners feeding raw food diets often claim that dogs are more resistant to these potentially deadly bacteria, there is no evidence to support that claim. In addition great care must be taken to avoid exposing people to these bacteria.

In conclusion, while it is possible to feed various homemade diets (both BARF and others) and do a good job - more often it is done incorrectly and thus may jeopardize the health of your dog more seriously than almost any commercial dog food on the market today. I advise dog owners and breeders to feed a well tested (by feeding trials) dog food and if problems are encountered, get veterinary or nutritionist advice to buy a different food to solve the individual dog's problem - rather than experimenting with these homemade foods.