

Your Dog Is What He Eats

By Monica Segal



The focus on nutrition for human athletes has been ongoing for many years. Canine athletes have also had the benefit of nutrition science, but results have been debatable. For example, carbohydrates have been deemed both good and bad, depending on who you ask. The argument that lactic acid causes problems continues. Using dietary fat as the primary source of energy is discussed and debated. The best way to keep a dog hydrated and in top shape throughout competition has brought designer waters to market. These examples are just a few of the ongoing concerns and interesting discussions owners of competition dogs bring to the table.

In the interest of full disclosure, here is my background. I formulate home-prepared diets for dogs and work with clients who want to enhance commercial diets. As such, I work with each dog as an individual. All dogs are unique in that each has a certain genetic makeup, various food tolerances, perhaps some health problems, and so on. Lifestyle can be individual as well. One dog lives only with a human family while another is part of a pack of many dogs. One dog is highly sensitive to stress while another is fearless in the face of almost any challenge. Some dog owners are on the road for many months with their dogs while others take the dog to an event only now and then. All these scenarios (and many more) have shown me one thing with certainty. Generic rules are not applicable to all dogs; therefore, we should consider dietary manipulation with an individual dog in mind. This is one reason I read studies with interest but remain somewhat dispassionate about the findings. I also suspect conflicting opinions regarding sports nutrition will be ongoing for the same reason, the need to individualize the process for the user. After all, studies and opinions can only be based on a certain group of dogs.

They are not the dogs I am working with. Neither are they your dogs.

Determining which dietary changes work for your particular dog is best done by trial and error: trying a food combination and taking note of results. That said, you need a game plan, some understanding of facts and controversies, and a realistic goal. Here are some points to consider.



Energy

Good results are dependent on many factors, not least of which is energy requirement, which translates to calories. We can provide calories by feeding a higher fat diet, and many dog owners prefer this method. Still, consider the fact that although dietary fat provides about double the calories of protein or carbohydrate per gram, it does not help the dog to feel particularly full. Yes, the dog may indeed be able to run hard and fast, but how focused would you be if you were feeling hungry while participating in a sports event? For example, you might ingest your required calories per day by consuming three chocolate bars, but chances are you would feel true hunger as the day wore on. I suggest lack of focus due to hunger lies behind some sports injuries we see. In fact, some dogs I've worked with seemed accident-prone until their diets were changed to provide more food volume rather than more calories alone.



Food volume should involve a thoughtful plan. We want to keep the dog slim, and the stomach empty enough so we do not cause discomfort or worse. We also want the dog to feel satisfied enough to focus on the job at hand. Some dogs turn off to food when they're working hard or are under stress, while others seem to want and need more food volume than ever. Let your observations be your guide. The dog that needs calories but can't handle much food volume is a good candidate for a higher fat diet. The one that seems distracted or shaky on the course may very well need more food volume.

A note about dietary fat: The causes of canine pancreatitis (inflamed pancreas) are debatable. Dietary fat alone may not be the only culprit but it can certainly take a dog that is prone to this disease over the edge. Be careful when adding fat to the diet. Consider genetics (certain breeds are predisposed to pancreatitis), medications that can cause a problem (prednisone is one), and the general health of the gastrointestinal tract.

What Kind of Fat?

Unlike people, dogs don't seem to have a list of "bad" or "good" fats. Both omega-6 and omega-3 fatty acids are required. Many diets derive their omega-6 fatty acids from plant-based oils, and most are pro-inflammatory. This sounds bad, and indeed, in large amounts it can be. Yet, a moderate amount of inflammation is a natural response to injury and an important part of general health and the immune system. We certainly don't want to ignore omega-6 fatty acids, but we can choose non-inflammatory versions. Primrose oil and borage oil are examples.

Omega-3 fatty acids are non-inflammatory. The best source of omega-3 fatty acids is fish body oil. Do not confuse this with fish liver oil (cod liver oil). The latter provides large amounts of vitamins A and D, and should be used only as required to produce a balanced diet. Of the fish body oils available, I'm partial to wild salmon oil. Unlike other forms of salmon oil, this product is derived from fish caught in the wild. Farmed fish contain high



levels of heavy metals and/or PCBs. If the label doesn't state "wild," the oil has been expressed from farmed fish. Consider the vitamin content of any fish oil you. Even wild salmon oil contains some vitamin D and different brands can have variable amounts. Know what you're feeding!

Flaxseed oil provides omega-3 fatty acids, but the body needs to convert the original omega-6 found in it before we arrive at omega-3. People do this most efficiently. Dogs are not quite as good at it. Use flaxseed oil if your dog is intolerant of wild salmon oil. Otherwise, I find that wild salmon oil can't be beat.

Also be aware that the more omega-3 in the diet, the greater the need to supplement with vitamin E.

Carbohydrates

Despite the anti-carbohydrate sentiment on the rise these days, carbs can play a key role for the performance dog. A study that dates back over 20 years¹ suggested that dogs consuming high-carbohydrate diets developed excess lactic acid in their muscles. We need to consider some facts. I am not suggesting a high-carbohydrate diet as fed to these dogs. It seems obvious that meeting energy requirements via carbohydrates is simply not the best option for an animal that is not an herbivore. Rather, my focus is on how we can use carbohydrates to boost the dog's performance. As such, lactic acid is not the enemy. Studies at the University of California at Berkley², conducted primarily in humans, found that muscle cells use carbohydrates anaerobically for energy. The cells produce lactate as a byproduct, then burn the lactate with oxygen to create even more energy. From the human study, "The first process, called the glycolytic pathway, dominates during normal exertion, and the lactate seeps out of the muscle cells into the blood to be used elsewhere. During intense exercise, however, the second ramps up to oxidatively remove the rapidly accumulating lactate and create more energy." I would not extrapolate from human studies if not for the fact that I've used carbohydrates successfully for canine athletes for many years. The key, however, is in understanding when they can help.



My personal preference for quick energy is rice. That's because it has a high glycemic index (white rice more so than brown rice), which means it will cause a rapid rise in blood sugar. As a result, we have quick energy, and that's what works well for the short term, before the body starts to burn fat (used as an energy source for endurance). So, to get a quick start, feed rice. To keep the dog going for a longer period of time, feed fat. To provide energy between runs, feed banana or sweet potato because both have a lower

glycemic index than rice, yet will satisfy energy requirements (and provide potassium at the same time). To slow down the blood sugar rise, add protein.

As you can see, the combination of certain nutrients and the time that we feed them can really affect performance. This is one reason my approach involves working with each dog as an individual. The requirement for energy bursts or endurance needs to be based on how a particular dog reacts at certain times.

Antioxidants and Phytonutrients



Oxidative damage can occur more often in hard-working dogs. A decline in plasma ascorbate in sled dogs during the racing season was largely prevented by ascorbic acid dietary supplements. Supplementing with vitamin C may help racing dogs by facilitating oxidation of fatty acids by mitochondria in working muscles.³ Before supplementing with vitamin C, it is best to consider the downside. Excess vitamin C is excreted in urine.

When excess vitamin C is combined with calcium also excreted in urine, it forms oxalic acid, which is the perfect setup for calcium oxalate stone formation. Never feed vitamin C supplements to breeds or an individual dog prone to calcium oxalate stones.

Another study of sled dogs found that dogs with higher plasma concentrations of vitamin E had greater endurance than dogs with lower concentrations.⁴ Although performance dogs work hard, they cannot be compared to sled dogs during the racing season. Still, this study points to benefits of vitamin E supplementation we should consider.

Phytonutrients, also referred to as phytochemicals, are naturally occurring compounds in vegetables, fruits, legumes, and whole grains. They contribute to the color, flavor, and disease resistance of plants. Most phytonutrients act as antioxidants that are helpful to humans by preventing tumors, enhancing immunity, and strengthening heart and blood vessels. Our understanding of the role of phytonutrients is growing as science attempts to catch up with Mother Nature. Here are a few examples.

Lycopene, the red pigment found in high amounts in tomatoes, is recognized as being important to eye health and also acts as an antioxidant that may prevent certain forms of cancer. Anthocyanins are phytonutrients that give fruits and vegetables their red, blue, or purple color. There is some evidence that anthocyanins have anti-inflammatory properties as well as acting as antioxidants. Beta-carotene is a phytonutrient carotenoid with



antioxidant and provitamin A activity. In addition to other roles, beta-carotene works with other natural protectors to defend cells from harmful free-radical damage. Because beta-carotene plays a role in recovery from exercise and other stresses, it is of particular interest.

The study of phytochemicals is incomplete and will probably take many more years before recommended allowances or doses can be provided. Knowledge of their composition, the effect of heating these compounds, whether or not particular ones are absorbed, how much is absorbed, and correlation to disease and disease prevention is in its infancy.⁵

We do know more than we once did. For example, it is recognized that the powerhouse of lycopene is amplified when tomatoes are cooked rather than raw. We also know that lycopene is best absorbed when dietary fat is added. So, how does this apply to dogs?

Studies regarding phytonutrients have not focused on dogs, and my guess is it will be a long time before that happens, if it ever does. Since the dogs I work with won't wait that long, I hedge my bets. Feeding fruits and vegetables to dogs is second nature to me, and is especially true for working dogs. I rotate bright colored vegetables (carrots, broccoli, and so on) and fruits, especially berries. Some are cooked and some are raw. This is in hope that we cover more nutritional bases, as in the example of lycopene in raw versus cooked tomatoes. To date, results have been very good. Inflammation seems to be less, and stamina seems to be higher.

Your Dog Is a Winner!

The fact that you keep your dog active makes him a winner over the course of a lifetime. Strong muscles and remaining lean keeps dogs stronger and healthier than they would be otherwise. Getting a particular dog to be the very best he can be is based on several factors including genetics, structure, lifestyle, and an understanding of how significant dietary manipulation can be. Feed the dog well and you will see a wonderful, loving animal bloom with better results at home and during trials.

Monica Segal is certified in Animal Health Care through the University of Guelph with studies in animal nutrition, physiology, diseases, and parasites, as well as pet care. She writes featured articles in many publications throughout North America. Monica conducts seminars and workshops by invitation, hosts an Internet discussion group at K9Kitchen, and authored a book, K9 Kitchen, Your Dogs' Diet: The Truth Behind The Hype, published in June 2002. Her second book, Optimal Nutrition, published in 2007, includes a foreword written by Ana Hill DVM, PhD. Monica lives in Toronto, Canada, with her husband Morley and dogs, Cassie and Tori.

References

¹Kronfield DS, Diet and performance in racing sled dogs, L Am Vet Assoc 1973;162:470-474

²American Journal of Physiology - Endocrinology and Metabolism. 2006

³The Waltham Book of Clinical Nutrition of the Dog and Cat (1994).

⁴Piercy, R. J., Hinchcliff, K.W., Morley, P.S., Disilvstro, R.A., Reinhart, G. A., Nelson, S.L. Jr., Schmidt, K.E., Morrie, C.A. (May 2000) Association between vitamin E and enhanced athletic performance in sled dogs. Medicine & Science in Sports & Exercise; 33(5): 826-833

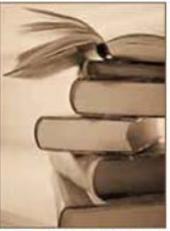
⁵Wrolstad, R.E., Distinguished Professor Emeritus of Food and Science and Technology, Oregon State University, Corvallis, Or. Private conversation.



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