Advanced Nutrition and Your Dog

The Case for Scientific Canine Nutrition

Human-grade dietary supplements, formerly reserved for pro athletes and hospitals, are powerful tools for increasing canine performance and health. This seemingly recent breakthrough--actually decades old--is worthy of serious examination by animal health professionals. A review of the scientific literature reveals a long, yet little known record of effectiveness.

The use of specific human-quality dietary supplements for dogs may seem new. However, this is not true. Only the widespread application of these "super supplements" for dogs is recent. Actually, human-quality supplements have been used on dogs for many decades. For 70 years, teams of scientists at prestigious universities have established the ability of certain nutrients to enhance canine performance and health to unprecedented levels.

If such convincing evidence of the remarkable effectiveness of super supplements exists, why haven't you heard about these breakthroughs until now? There are two main reasons.

Reason 1, most of these studies use dogs as test subjects for humans. In other words, dogs were "animal models" for providing insights into human metabolism. Although numerous, these studies generally are hidden in obscure scientific journals. Since these journals pertain to human metabolism, some do not even use the word "dog" in the title. Moreover, some studies are so old they don't appear on modern computer searches.

Reason 2, veterinarians, the link between nutritional research and you, are largely unaware of these discoveries. Understandable when you recognize that veterinarians are rewarded for practicing medicine, not reading isolated scientific journals outside their field. And for good reason--this rapidly evolving area is not taught in veterinarian school, nor is it required reading after graduation.

Medical Research (1600 until present)

Since at least the 17th century, dogs have been used to study digestion and absorption. In 1816 the noted French scientist Dr. Magendie studied the effect of feeding sugar, olive oil and water to dogs, resulting in nutritive failure. Dogs have a long history of use as models for modern advances in insulin therapy, heart transplant and other medical developments. Significantly, much of the fundamental understanding of the metabolic alterations caused by infection, burns and trauma derive from canine models.

Medical Foods, powerful and specialized nutritional tools for meeting exceptional metabolic demands, were first successfully tested on dogs. In 1910, Drs. Abderhalden and Loewi examined the efficacy (scientific validity) of feeding predigested proteins to dogs, decades before this was standard for stressed humans.' Building on this pioneering canine work, medical notables such as Drs. Abbott and Rose continued to develop medical foods, which in time, became "defined" formulas.

The primary organizing principal of medical foods is their predigested nature. That is, energy sources that are partially predigested into smaller, more easily usable molecular units. Predigested nutrients offer important advantages to stressed individuals. In addition to protein, predigested carbohydrates and fats were also tested on dogs with similarly positive results.

The first medical food formally defined was likely by Dr. Elman in the early 1940s, and was used to boost survival rates in premature infants and burn patients. Medical foods have evolved into many variations used to treat conditions ranging from post-surgery to food allergies to digestive diseases. The primary recipients of medical foods are hypermetabolic. In other words, individuals with abnormally rapid metabolic rates which cause wasting of muscle tissue. These individuals typically have energy and nutrient needs 30% to 200% greater than normal, but often have depressed appetites and lowered digestive capabilities. To these individuals, predigested medical foods are literally lifesavers.

NASA "Space" Foods (1962-1970)

The next major advance occurred in the early 1960's in conjunction with the NASA manned space program. At the time, space flight was unknown and terrifying. Little was understood about how the body would respond to weightlessness. Dr. Winitz and others took medical foods out of hospitals and investigated their benefits on another stressed population--astronauts. This was a major leap forward because it marked the first time medical foods were used to enhance performance and health, not fight disease or muscle wasting states.

Results of this research were positive and highly significant. As one example, a group of 24 healthy young males, eating 2,100 to 3,700 calories in medical foods, were closely monitored. The following benefits of medical foods were noted.

High nutrient density. Medical foods are extremely concentrated in nutrients. With virtually no fillers or food bulk, they are 2-5 times more concentrated than ordinary foods.

Extreme ease of digestion. Since the best medical foods contain energy sources that are partially predigested, less digestion is required. This is very important in stressed individuals who often have reduced ability to digest ordinary foods.

Greater absorption. Predigested energy sources are absorbed at high rates. And, absorption is generally very rapid, often appearing in the bloodstream within 12 minutes. This rapid availability of energy and nutrients is highly advantageous to stressed individuals.

Lowered fecal output. The "low residue" and enhanced absorption of medical foods translate into greatly reduced fecal output. The amount of feces may be decreased by half. This reduction is important in dogs during stress conditions.

Flexibility. These formulas can be easily modified and tailored according to specific needs. Portability is nearly total, and taste properties can be adjusted to please almost any palate.

Positive nitrogen balance easily achieved. Studies support the ability of the combined advantages of medical foods listed above to combine to produce a state of positive nitrogen retention. Positive nitrogen balance refers to the body's status of potentially building more tissue and vital compounds than are being broken down (anabolism). Without medical foods, positive nitrogen balance is extremely difficult to achieve in hypermetabolic individuals, and so muscular tissue wasting is common.

Sports Science (1920 until present)

Advances in conditioning and nutrition enabling drug-free performances unthinkable just a decade ago trace much of their origins to canine research. The use of dogs to measure metabolic alterations of exercise and nutrition dates back to the earliest days of modern exercise physiology.

Scientific notables Drs. A.V. Hill, Dill and others helped build the foundation of modern-day exercise physiology with canine work. In numerous studies, dogs have been used to examine general exercise metabolism, and in more specific studies, lactic acid, amino acid and fat kinetics, among other metabolites.

Surprising to many, a significant number of today's most efficacious and powerful sports nutrients and practices were first proven on dogs. Creatine-an important muscle energy nutrient abundant in wild diets but depleted in modern foods—is one example. Recent studies in humans show creatine supplements increase physical performance, the rate of recovery after workouts and protein (muscle) synthesis to a significant degree.

However, it is not widely known that the first major study revealing the anabolic properties of creatine resulted from canine research. In 1923, Dr. Benedict of Cornell reported his findings on healthy dogs given creatine supplementation. They noted a sharp increase in nitrogen retention in dogs receiving a modest amount of creatine. Creatine is naturally found in high amounts in wild prey species, but is found in very low amounts in commercial dog foods because of processing.

Similarly, the modern widespread use of lactose-reduced whey (lactalbumin) protein for medical foods, human athletes and infant formulas is based on dog studies. In the 1930s, investigators noted the very high biological value (BV) of whey proteins when predigested into small amino acid groups and given to dogs, which has also been found to be the case in human subjects.

Glucose polymers and medium-chain triglycerides, the predigested nutritional forms of carbohydrates and fats respectively, have been used successfully on dogs with metabolic advantages essentially identical to that noted in human subjects.

Important insights for optimally effective timing and use of sports supplements and foods has resulted from canine research. The beneficial use of carbohydrate supplementation during exercise has been repeatedly demonstrated in human studies. Carbohydrate supplements given during exercise delay fatigue, spare glycogen stores and help fight post-workout muscle breakdown. However, it is not widely known that the first study demonstrating these performance-enhancing benefits occurred via canine research.

In the 1930s, Dr. Dill used the famous "Joe" dog to determine if exogenous (extra) calorie sources in the form of carbohydrates could help support blood sugar and extend endurance capacity. Without extra carbohydrates, Joe was able to exercise about two hours to near exhaustion. But when provided carbohydrates in water every 30 minutes with a very brief break, Joe was able to exercise for 17 hours!

More recently, research on dogs has proved the timing of medical foods to be of extreme importance. Taking in high quality predigested medical foods after workouts—within 30 minutes-greatly increased the degree and rate of recovery in dogs after strenuous workouts lasting 150 minutes. The rate of protein synthesis (muscle repair and growth), generally depressed after exercise, was 30% greater in dogs taking in medical foods immediately after workouts. This study confirms earlier research on rats and human subjects.''

Canine Research (1900 until present)

The canine body has not fundamentally changed in a very long time. However, the understanding of the canine body is undergoing a modern revolution.

This major breakthrough in understanding stems from two main areas of investigation. First, a fresh

recognition of the evolutionary food habits of dogs has contributed enormously. The second contribution comes from discovering the many parallels between human and canine exercise metabolism.

The common denominator to these seemingly unconnected discoveries is what scientists refer to as a "unifying theory". In other words, a new way of looking at old information that suddenly makes sense of it all--helps explain "why" things are. The unifying theory for dog nutrition is as old as dogs themselves. It comes from answering a single question:

What are dogs genetically designed to eat?

In other words, through merciless "natural selection" over eons, what food preferences and traits have dogs evolved to enable their survival? This is not merely an academic question. Until the recent ascent of man destroyed habitats and natural food chains, wild dogs covered more of the world than any other land predator. Clearly, wolves and wild dogs are one of nature's best-selling genetic designs for survival, and therefore discovering what and how they eat is important.

To understand this eating behavior, a brief review of the biological evolution that's resulted in modern wild and domestic dogs is in order. Anthropologists generally agree that the ancient lineage of dogs can be traced back to a little creature called a Miacid. This small, meat-eating mammal is thought to be the precursor (ancestor) of cats, dogs, bears and related species. Miacids were highly carnivorous, a fact borne out by their teeth and skull remains. However, somewhere about 5 million years ago, dogs began to diverge from this family tree, becoming more generalized in feeding as evidenced by evolving dental features.

Tooth structure and features help experts determine how animals make their living and what they eat. For example, cats, which feature almost exclusively sharp tearing and puncturing teeth, can live their entire adult lives on meat and water meeting all their needs.

In contrast, dogs have much more generalized teeth; powerful and sharp in the front, broader and grinding in the back. Unlike cats, dogs can survive on almost anything, or almost nothing. Not just meat as with cats, but dogs can also supplement the diet with bugs, berries, roots, old roadkills, whatever. Dogs can survive on food items that more specialized cats would not touch.

Dogs are carnivores. However, this catchall phrase is more often used to sell dog food than to provide clarity. Like cats, bears, hyenas and others, dogs belong to the order Carnivora. But there are degrees of carnivorous behavior, ranging from pure eaters like cats to much more opportunistic, omnivorous feeders like bears and dogs.

Grizzly and related Brown Bears are the largest land predators. These remarkably powerful animals can weigh up to ¾ of a ton, and have awesome teeth and jaws capable of quickly killing any animal in their world. Yet television wildlife specials reveal that for much of the year, these large animals forage on berries, roots and whatever food sources are available. Similarly, Russian scientists have reported that Polar Bears, which under ideal conditions will consume 200 pounds of seal per day, can resort to eating seaweed rather than starve when times are tough.

What do dogs eat in the wild? Equally important, how do they eat--in what order do they feast on the different body parts of prey species? And what do these food preferences mean to today's dogs and medical foods? Ironically, the two groups with the most light to shed on what wild dogs eat--native people and wildlife biologists--have been ignored.

Native peoples throughout the world have lived around wild dogs for millennia. Their intimate knowledge of what and how wild dogs eat has been passed though their folklore for countless generations. Yet because they typically lived in relatively simple cultures, experts considered their observations tainted with mystic significance, and so generally disregarded their valuable insights.

Wildlife biologists are another group with in-depth knowledge of wild dog food habits that are also largely ignored. In general, observations from native peoples and wildlife biologists are in agreement regarding food habits of wolves and wild dogs.

This is what dogs are genetically designed to eat.

If fortunate enough to make a large kill, wolves and wild dogs generally follow a stereotypic pattern of opening the lower body cavity, often before consuming internal organs or muscle meat.

From the stomach and upper intestines, they greedily extract the partially digested grasses and vegetable matter (digesta) eaten by the prey animal. Since prey species are generally herbivores that can be browsers or grazers, this digesta covers a wide range of grasses, sedges and other vegetable matter.

When they eat small prey such as mice, lemming or even larger fare like hares and rabbits, they "wolf" prey items down, generally whole. In this way, wolves and wild dogs also consume the stomach contents of the prey animal.

Seen through the lens of "evolutionary adaptation", the preference for digesta makes survival sense. Inside the intestine and plant matter is a wide array of nutrients including vitamin C, FOS and trace minerals, probiotics and enzymes.

Wolves and wild dogs obviously enjoy and benefit from eating meat. Nutrients in meat that promote canine survival and health include amino acids, carnitine, creatine, vitamins and minerals.

But clearly, wolves and wild dogs have evolved to seek and benefit from the consumption of non-meat dietary components derived from wild diets.

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Every Time You Feed Meat, You Also Feed Creatine

In 1832, French researchers noted muscle tissue from wild foxes contained about ten times the creatine as the same tissue of caged foxes. Since it appeared both fox groups received approximately the same diet, it was concluded physical activity accumulated creatine in muscle tissue. In other words, wild animals, because they're forced to move for survival, store more creatine than sedentary animals.

Other researchers examining the relationship between domestic and wild animals within the same species have noted striking differences in lipid content and profile. Again, within the same species. This suggests that there are significant but subtle differences in wild and domestic meats. One of the most important differences appears to be creatine content. Although more research remains to be conducted, it can be said that all meat is not the same. Clearly, meat is much more than a mere vehicle for dietary protein.

Based on studies by Mesch and other researchers, it appears that wild dogs can "wolf" up to several kilos of fresh wild meat at a sitting. Since muscle tissue is the primary repository of creatine, it can be reasonably said that wolves consume relatively large amounts of creatine when lucky enough to make a kill, or scavenge. Based on French research, this wild meat may contain more creatine than domestic meats. At any rate, dogs enjoy meat and will eat large amounts at almost any opportunity. With every bite of meat they take, Mother Nature makes sure they get creatine, too.

It can also be said that dogs are evolutionary designed to consume not just meat, but also the creatine within the meat as part of Nature's wisdom. Interestingly, the first major creatine study in America was conducted on dogs in the early 1920's at Cornell University. Scientists found a sharp rise in protein/nitrogen retention when exogenous creatine was supplied in the diet. Increasing protein retention is important because it is stored in muscle tissue, and less lost through the kidneys.

But unlike meat, and especially wild meat, commercial dog food contains very little creatine. This may be one reason why meat diets, most recently advocated by Dr. Billinghurst, and others over the years, report meat-based or meat-supplemented diets as providing more health benefits than dry commercial dog food alone.

The lack of creatine in commercial dog food, and the replacement of it in meat, may be a part of Nature's wisdom of feeding meat to dogs. So when you feed meat, you provide much more than just protein and amino acids; you replace "lost" wild nutrients missing from commercial dog food. Science is just now beginning to understand "why" meat is so beneficial and productive to dogs. One of these "lost" factors lost in modern foods, but contained in meat, is certainly creatine.

So when you feed meat to your dog--especially raw meat--you're also supplementing creatine because it's built into the molecular structure of meat. So creatine intake is NOT new for dogs. **Actually, the absence of creatine is new**. Until commercial dog foods came into being, dogs consumed creatine in the meat they ate from our plates. With modern dog foods, creatine intake virtually stopped. And about the same time, the many metabolic problems associated with modern dogs began, a coincidence hard to overlook.

APRL

Don't Stress Out Over Canine Stress

These 5 Natural Nutritional Weapons Can Help Tip the Balance of Power In Your Dog's Favor In The Stress Wars. The Performance and Health Results They Help Produce Have to Be-Seen-to-Be-Believed. They're 100% Natural, And Beginning to Show Up in Health and Pet Stores. Welcome to The Drug-Free Future of Advanced Canine Performance.

"Canine stress" is a term casually thrown around in dog magazines and wherever fanciers meet. While stress has a specific scientific meaning, the misunderstanding of the true nature of stress has been used to describe and explain everything from poor performance to lack of appetite. Worse, misunderstanding the cause-and-effects of stress on the canine body often results in time and money spent trying to reduce stress, while actually increasing toxic stress effects!

By understanding what canine stress is, you gain power over it. By becoming aware of the new breakthroughs that help reduce stress's toxic effects, you can improve your kennel's performance and health to a degree previously considered impossible

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Science's modern understanding of stress comes from a brilliant biologist named Dr. Hans Selye, often called the "father of stress". Based on early human and animal studies, and using truly remarkable insight and intuition, Dr. Selye developed an explanation of stress that's still valid today. His funny sounding stress model was called GAS--General Adaptation Syndrome. Until many scientific models, the more modern science learns about stress with advanced research tools, the more Dr. Selye's ideas have been validated.

- First, there is a stressor, which upsets--"disrupts"--the body's metabolic balance of "homeostasis". For example, a hard workout will begin this stage.

- The next stage is the "alarm reaction". During this stage, the body reacts to stress though a predictable (stereotyped) chain of chemical and hormonal events. This is also called the 'stress reaction". No matter the cause of the stress, the response of the body is the same. In that way, the stress response is said to be generalized.

- The third stage is the "adaptation". This is when the body adapts to, or "accommodates", to the stress. For example, after the workout, the body will adapt by developing more enzymes, greater muscle strength, etc.

Perhaps the most remarkable aspect of Dr. Selye's stress model is the observation that the stress response is generalized. In other words, almost any event can kick off the same stress response. In other words, whether a dog undergoes a workout, travels to a new place or is in cold weather, the body reacts the same in important ways. Remember that stress is generalized.

The Next Wave

The next advance in stress research began in the late 1960's when sport scientists started to use a new technology called isotope labeling, which enables researchers to track the metabolic fate of a substance. Isotope labeling gave scientists a much more detailed view of metabolism during and after exercise.

Using isotope labeling, researchers were astonished to find that an unexpectedly large amount of protein was used during exercise. In one study, the essential amino acid L-Leucine was found to be utilized at a very high rate--90% of the day's total recommend intake was burned in just two hours of exercise.

Reading scientific journals of that time, it's clear researchers conducting these studies almost could not believe their early findings. The amount of amino acids burned during and after exercise seemed to conflict with earlier theories before the advent of isotope labeling. Until these newer studies, it was believed that muscle tissue was only broken down to supply energy during starvation, trauma or wasting diseases like cancer. The notion that somebody's body would actually "cannibalize" its own muscle tissue during "healthy" exercise seemed confusing.

After a while, their research papers began to reflect the type of idea connecting what good scientists are noted for. Simply, they realized the muscle breakdown syndrome of athletes during and after workouts was remarkably similar to that found in starvation and trauma patients in hospitals. They concluded that the body's response to workouts was much like its response to trauma. Not surprising when you remember Dr. Selye's model, which states whether it's workouts or trauma, the stress response of the body is essentially identical. After all, training is trauma.

"…the body's response to workouts was much like its response to trauma...after all, training is trauma!"

The recognition that training is trauma marked a milestone in sports medicine. For the first time, scientists were able to confirm why chronic workouts appeared to be damaging to the body--the stress response ending in muscle breakdown. And the harder, longer and more frequent the workout, the more muscle broken down. Another important insight they gained from this research was that muscle loss did not occur just during the workouts, but often for many hours after the end of exercise.

The Missing Piece of the Puzzle

Now that the true nature of stress was understood, another group of scientists contributed new, very powerful weapons to fight stress. The latest phase of stress research involved testing and developing various natural nutrients that might actually reverse the stress response resulting in muscle breakdown. Until this time, anabolic steroids were the primary agent to combat muscle loss. Of course, these drugs have serious negative side effects. The idea that 100% natural nutrition could someday make these drugs obsolete was considered remote 25 years ago.

At first, these nutrients were used in clinical situations, typically on burn and other hypermetabolic (abnormally fast metabolism) patients. Later, they were used on athletes to assess their ability to reverse muscle loss. To summarize years of study, these nutrients have been shown to be both safe and highly effective. Their ability to promote protein synthesis and reverse stress response is, at this point, well documented. However, outside the world of elite athletic nutrition or medical foods, these findings are largely unknown.

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However, the research and real world-record suggests that in some cases, these nutrients are actually more effective on dogs than humans. In fact, the use of some anti-stress nutrients was first tested on dogs prior to human test subjects. The anti-stress nutrients listed below are in some way related to amino acids.

1. **Branched-Chain Amino Acids (BCAAs)**

L-Leucine, L-Isoleucine and L-Valine are the three amino acids comprising the branched-chain amino acids (BCAA) group. BCAAs are important in understanding how and why stress degrades your dog's health, and how supplying certain extra amino acids in the diet can help reverse stress effects. Fully 35% of the protein in muscle tissue is made of BCAAs. Not long ago, it was discovered that BCAAs were found in high amounts in blood of stressed individuals. These high concentrations were caused by the breakdown of BCAAs from muscle tissue to supply energy. One study revealed that 90% of entire day's supply of L-Leucine was used in less than two hours of aerobic exercise.

In an attempt to reverse muscle breakdown for stressed individuals, medical researchers and sports scientists have given extra BCAAs in the diet in numerous studies. In general, the results have been very positive. When BCAAs are given during stress, protein synthesis was stimulated. This is important because during stress, protein synthesis is typically depressed.

The bottom line lesson of these studies is that either by diet, or by breaking down muscle, the body is going to use BCAAs for energy during stress. The body doesn't care where the BCAAs come from, just that they're available. When you provide extra BCAAs in the diet, you help reverse the stress response because the body does not have to break down muscle to supply them. But supplementing BCAAs in the diet appears to do more than reverse stress. A recent study suggests dietary BCAAs also increase lean muscle mass and endurance.

"When you provide extra BCAAs in the diet, you help reverse the stress response because they body does not have to break down muscle to supply them."

Ironically, the better conditioned the canine body, the more BCAAs burned as energy, and the more muscle broken down. This surprising fact makes sense when you realize that muscle just doesn't move the body, it also supplies energy during stress. In fact, workouts actually help develop enzymes that help breakdown and use BCAAs from muscle for energy, just as enzymes that utilize fats and proteins are enhanced from physical training. Remember--muscle is stored energy, and the canine body **"cannibalizes"** this tissue during stress. Accordingly, stressed performance dogs have an increased need for BCAAs in the diet.

"Remember-- muscle is stored energy, and the canine body "cannibalizes" this tissue during stress".

2. **Creatine**

Wild canines, and therefore domestic dogs, have evolved over hundreds of thousands of years to benefit from consuming creatine. Creatine is a natural component of meats, and may be a principle reason why meat often adds an added dimension to the canine diet. When dogs consume meat, they take in fairly large amounts of creatine; the more meat eaten, the more creatine along with it. French studies suggest wild game meats contain more creatine than sedentary, livestock animals. The canine body also produces creatine from amino acids in the diet.

The value of creatine to dogs is not so much in enhancing performance directly, though it can benefit certain types of athletic events and training. Instead, creatine fights stress by stimulating protein synthesis and nitrogen retention. In other words, creatine causes the dog's body to retain more of the protein it eats, and therefore, less is lost though urine urea nitrogen (UUN). This "sparing" of lean muscle tissue is at the core of fighting stress.

Creatine is also documented to help fight dehydration by its ability to increase fluid volume in muscle cells, and recent evidence suggests it may even help build aerobic enzymes. Interestingly, dogs appear to benefit from smaller dosages per pound than human athletes. The first major creatine study used dogs as test subjects.

3. **L-Glutamine**

This remarkable anti-stress amino acid benefits performance dogs in several important ways. Recent studies reveal that just as in human athletes, hard training dogs can quickly deplete L-Glutamine levels. Then, they begin to break down lean muscle. At this point, it may require up to 4 days rest to return to normal L-Glutamine levels, during which recovery is slowed and immunity blunted. Added L-Glutamine, however, has been demonstrated to help reverse, or in some case, perhaps even largely bypass, these negative low-glutamine events.

Critically, glutamine also helps spare BCAAs from being broken down from muscle to provide energy. L-Glutamine also boosts insulin production. Insulin is important because this hormone is the principle facilitator (driver) of amino acids into cells. Glutamine has even been implicated in fighting infection. With its many anti-catabolic roles, it's easy to see why glutamine may be the single most important anti-stress amino acid.

4. **OKG**

This amino acid derivative of L-Orthinine has been clinically demonstrated to reverse muscle breakdown and enhance recovery in another highly stressed group--burn patients. Additionally, OKG boosts insulin production, which helps promote the uptake of amino acids into muscle cells for repair and growth. OKG is also a powerful ammonia scavenger. Clearing ammonia can enhance performance because ammonia is a cause of fatigue.

5. **KIC**

Another potent amino acid spin off, this one of L-Leucine, KIC has been shown to be especially effective at reversing muscle breakdown during trauma. It also detoxifies ammonia, as well as stimulates insulin production. KIC is a very powerful anti-stress nutrient.

These 100% natural amino acid related stress fighters are but a few of the new anti-stress weapons scientific research has given today's performance dog fancier. These nutrients can be easily and safely worked into your canine nutrition plan. Best results are obtained when taken together and at very specific times.

The Bottom Line To Stress

The bottom line to stress is simple. Stress is a generalized response to almost any stimulus. Avoiding stress with performance dogs is almost impossible. Workouts, traveling and breeding are just a few of the factors that trigger the stress response.

If you can't avoid stress, the smartest strategy is to take lessons from sports medicine research, which include providing safe and natural nutritional supplement tools demonstrated to help reverse the toxic stress effects.

Caution

The importance of selecting and feeding pharmaceutical grade versions of the high-tech nutrients reviewed in this article cannot be overstated. The nutrients used and these and other studies are almost invariably human or pharmaceutical grade. In fact, even studies using dogs as test subjects use human or pharmaceutical grade nutrients. This is because these human or pharmaceutical grade nutrients are highly purified and safe.

In contrast, feed grade amino acids are typically much less pure, and more likely to be contaminated. Generally speaking, feed grade nutrients are those rejected for human intake. Although feed grade nutrients may cost less, more is often needed to obtain a therapeutic effect, so they often represent false economy.

Human or pharmaceutical grade anti-stress nutrients can now be easily obtained by companies who specialize in them for canine use, or from health food stores including chains like GNC.

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Into the 21st Century

Canine Nutrition Gets Closer to Steroids

A Little Knowledge is a Dangerous Thing

APRL

Remember the Heaven's Gate people? The ones that believed that behind the recent comet was a space ship that would, after they shed their earthly bodies, transport them home. Believed it so much they committed mass suicide to join the space ship. How could people, not dumb by any means, buy into such a stupid idea? Two factors explain it. First, they heard the same false messages, again and again from their leader, the people they talked to every day and in magazines. Surrounded by false messages. Hear false messages long enough, often enough, human nature takes over and the mind adopts something false as true. Second, they took a scientific truth - there was a comet - and then added silly stuff about space ships. A little knowledge is dangerous.

This blend of half-scientific fact, half stupidity is alive and well in dog nutrition. While believing in totally false or outdated ideas about dog nutrition won't make you kill yourself, it does something maybe almost as bad. You waste. You waste money. You waste opportunity. You waste dogs. You waste time. You waste effort. Waste it all on false ideas, endless trial-and-error that ends in frustration. And like the comet people, waste it all for no other reason than because part of what

you hear sounds true, therefore you think the whole idea must be true.

Recently, there's been a rash of articles that follow the same half science, half made up nonsense. Because part of what's written is actually scientifically valid - the other part being 100% baloney - the whole thing tends to sound accurate. And since it's in writing, it can look official. But virtually without exception, this information almost always is either obsolete, totally false or just made up. Some of these falsehoods are just silly, but some can actually harm dogs, especially pups. A little knowledge is dangerous.

That's the bad news. The good news is that there's a way out of this trap that keeps you like a rat in a maze taking 2 steps forward, 1 backwards with bogus information. The real question is Who, what, why to listen to? The solution is easy, and these days, it's cheap. Especially compared to the cost of knowing just enough to hurt your dog.

The solution is called sports science. A real science. Which means generations of bright guys spending serious money over many decades to discover just what makes the canine body so special. What natural laws, principles and proven cycles govern the canine body, and how to work with these powerful forces to coax out more horsepower. The fact that this information has been hidden away in isolated scientific journals, combined with the fact that it does not promote dog food, so pet companies have not spoken of it, means it might as well not exist. To fill in this knowledge vacuum, the half-truth BS continues. But these facts do occur, they are real, and if you pay attention, it can help you make smart choices and stop wasting time and money and dogs.

This has never been truer than in a recent article regarding carbohydrate loading for dogs. A great example of comet thinking. Here's the mixture. One part scientific fact, one part outdated nonsense presented as fact. What's the scientifically accurate part? Way back in 1967, scientists discovered the more carbohydrates the human body is able to store into glycogen, the longer you can exercise. What's glycogen? A kind of a starch stored in muscle and liver tissue. All this means is you eat a carb-containing food, like a potato, which is then digested down into simple glucose, then reassembled into longer glucose strings in tissue. This carb glycogen is then broken down during exercise to provide fuel to muscle tissue, the brain, etc. As a by-product, it also forms lactic acid. More on that later.

Sports scientists in Europe came up with a plan to stock more glycogen and called it carb loading. The original plan involved a depletion stage in which carbohydrates were withheld while the athlete worked out. After this depletion stage, a period of high carb intake occurred. This resulted in a super-compensation of glycogen. However, this first carb-loading plan has been discounted and passed over because of many serious side effects. In dogs trying to make weight, it has very serious pitfalls. As you'll see, there's a new method that delivers even better overall results, without the side effects.

Bad as they are, there's a worse one. The scientific evidence is in: carb loading on dogs, especially using the depletion state, does little to increase performance over a regular diet and rest. In fact, well controlled scientific studies at prestigious research centers showed time and again, highly conditioned sled dogs performed better, used less glycogen, used more fat, had more fat-burning ability within muscle cells, produced less lactic acid and had up to 50% greater ability to process oxygen than when on lower carb diets. These are the scientific facts; comparing both high and low carb diets on dogs, head to head.

These studies measured not just performance, but also important blood values like hemoglobin, Vo2 Max and other markers scientists use to pin down which diet and workout plan work, and which don't. And for dogs - not humans - what diet worked best to increase endurance? Surprise -

a diet that followed these basics:

- Less than about 30% protein reduced oxygen transporting ability of blood, and other negative changes.
- Less than about 20% fat increased lactic acid build up, rapidly depleted glycogen stores, and other negative changes.

But why, if carbohydrate loading works on humans, does it more often than not actually decrease canine performance? Aren't dogs and humans identical in this way? Read on.

Carbohydrates, when burned, release their energy that ends up as ATP. As a by-product, lactic acid is also produced. The more carbohydrates burned, the more muscle energy and the more lactic acid produced. It's that kind of world. Metabolic checks and balances. Lactic acid (H+) is the 500-lb. gorilla. It drops pH in muscle. Turns off very, very, very important muscle energy enzymes. Causes the familiar pain and burn. Muscle energy slows, then stops. So while more lactic acid shows that more muscle energy is available, too much means extreme fatigue, and as Vince Lombardi said long ago, fatigue makes cowards of the bravest athlete.

But here's where dogs and humans part company. Dogs are truly incredible aerobic energy machines, able to blow away the best human athletes by many degrees of magnitude in terms of endurance. In fact, studies have shown that the aerobic capacity of canine athletes exceeds even the best human athletes by over 200%. Additionally, canine heart rates can reach 300 beats per minute, and keep this pace. The human heart would explode at this level. Clearly, dogs have evolved for millions of years, and have been selectively bred by humans, to genetically be hard wired with a very high aerobic capacity. Therefore, the key trait of the canine athletic body, and what separates them from humans, is their amazing ability to burn fuels in the presence of oxygen during exercise. In other words, aerobically. And the main aerobic fuel is…not carbohydrates, not glycogen. It's fat. Free fatty acids (FFA) as scientists call them.

Yes, fats. When you give excess carbohydrates out of whack and overbalanced over fats, it actually reduces canine endurance performance. That's because the extra glycogen added with carbo loading actually gets used up faster than normal, and as a result, creates more lactic acid faster. In other words, the ultimate energy source in the dog can't be used because excess carbohydrates actually inhibit or block this vital energy process. Even very lean dogs have enough fat stored in muscle and blood stream and sub q to supply the energy for daily back to back workouts. But too much carb and too little fat in the diet means the fat never gets a chance to kick in. And the glycogen is burned too rapidly; and when it runs out, generally and predictably in 25-45 minutes, it all stops. Sound familiar? This is basic scientific fact. More proof showing a little knowledge is a dangerous thing. Research shows feeding hard working dogs too many carbohydrates and too little fats cause serious health problems. Not just reduced performance, but actual damage.

Cell membranes are damaged and may be ruptured, causing a chain reaction ending in toxic substances spilling into urine, and vital cell chemicals leaking throughout the body. Also, the canine heart stops using fats well for energy, which can stop energy production, even before lactic acid might. And anemia, which signals reduced oxygen-carrying ability, is common when carbohydrates are too high, fats too low.

So all carbs are bad for dogs? You might think so after seeing the facts. But things change in science, new studies are published, knowledge expands, we understand the body better and thereby find improved ways to extract more performance out of it. And not fight against it. Guess

who wins that battle?

A new and much improved method of giving carbohydrates to athletes comes from Dr. Sherman. He set out to discover if he could somehow achieve the increased glycogen stores gained during carb loading, but somehow avoid the many pitfalls of the depletion stage and the accompanying muscle damage, etc., which often cancel out the increased glycogen advantages. Guess what? He did it. And as far as muscle glycogen, the results are essentially identical to the depletion method, but without the drawbacks. His system is deceptively simple. He increased carbohydrate intake the last three days before an event with almost total rest. That's it. And glycogen built in muscle tissue to very high degrees. In the real world of human athletics, Dr. Sherman's plan is what athletes follow instead of depleting carbohydrates, far and away. So is Dr. Sherman's method just an unproven idea that jocks use, and scientific studies don't back up? Nope. The scientific community agrees, and in fact, Dr. Sherman's method is listed in sports science texts as the preferred method. With all the problems resulting from the 30-year-old method, and from too many carbohydrates, too little fat in general, why would anybody use it on today's dogs? Outdated, counterproductive and actually dangerous, why? The more important question is - how and why could anybody seriously write an article today pretending to reflect science and what works in the real world while promoting this disproven and outdated method? It means one of two things.

First, the author of the article promoting carb depletion and loading disagrees with the overwhelming scientific evidence, and has his own proof. Which is impossible, because such proof does not exist. Second and much worse, the author was not aware that these facts even existed, and was just perpetuating the old part fact, part baloney nonsense that keeps conditioners from getting the most from their dogs. Either way, it's the comet thinking.

So that you can see for yourself why the ultra high carb diets and products don't work for dogs, I've included a short list of scientific references. This is a partial list only. But it's important to be able to look at actual proof regarding any feeding plan, and especially any idea tossed out as pretending to reflect the most up to date and accurate science as the previous carb loading article attempted to do. Call or write APRL and we'll show you how easy it is to locate these and other important discoveries using your home computer. Or contact us and we'll send you the reports directly.

Knowledge is power. But a little knowledge is a dangerous thing.

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So how to apply this scientific stuff to enable your dog perform better?

1) **FIRST, USE ONLY HUMAN GRADE FOODS FOR CANINE ATHLETES**. A well-kept secret that's starting to come out in the news, new antibiotic resistant strains of highly toxic E. coli and salmonella are in the US meat supply. Watch the news. In dog food, even though they use unfit for human meats, these microbes are cooked out. But in dog supplements, there is a real danger because they use the same 4-D meats (dead, diseased, disabled and dying) as dog food, but are

not cooked so the microbes and contamination are still there. In contrast, human grade products use safe raw materials, and are made in clean, sanitary conditions. The products are pure and safe enough for infants and pro athletes. How to know if the product is pure and safe enough? Easy. Go to a health food store and buy human products.

2) **INCREASE CARBOHYDRATES THE LAST 3 DAYS**. Don't deplete carbohydrates. Simply and sensibly increase carbohydrates the last three days. But not at the expense of fat intake! It's called balance.

3) **GIVE THE RIGHT KIND OF CARBOHYDRATES**. Tests proves the carbohydrates in Cyomtax actually reduce lactic acid up to 40%, while stocking liver glycogen many times more effectively. Using the old carbohydrates just makes lactic acid worse.

4) **UNDERSTAND EXCESS CARBOHYDRATES OFTEN DECREASES PERFORMANCE, INSTEAD OF BOOSTING IT**. More is not better where carbs and dogs are concerned, especially when given with too little fat. It causes excess and unnecessary lactic acid. So in trying to increase performance, your dog will actually do worse.

5) **KEEP FAT LEVELS AT PROPER LEVELS**. Limiting fat to a major degree the last three days is a direct path to excess lactic acid and metabolic fatigue severe enough to suddenly stop the show.

Dog Nutrition and Meat

Dumb and Dumber

Dog food and tobacco companies are more alike than they may seem. Both are multi-billion dollar industries with millions of consumers using their products on a daily basis. Both have enormous political and economic clout. And both owe much of their past success to creating and perpetuating myths in spite of overwhelming scientific proof to the contrary. Both have their company-owned "experts" who try to make the myths sound true in the face of scientific facts. These giant industries have pushed so much money for so long to promote these myths they've fooled generations of us.

But things are changing. Former tobacco company researchers are releasing scientific studies and insider information that’s exploding the myth that smoking is not dangerous, and that the executives of these companies were not aware of this fact long ago. This formerly secret research is now available on the Internet.

Things have begun to change for pet food companies, too. Until now, they controlled virtually all information regarding canine nutrition though the control over the hearts and minds (and pocketbooks) of vets, the media and virtually everything else involving dogs. But independent scientific researchers have published research exploding many of these myths. Until now these studies have been isolated in medical libraries read by only a handful of individuals. That's what the dog food companies have banked on.

But like the tobacco industry has learned, when people get a chance to learn the facts, the myths are seen for what they are - great con jobs. The genie is out of the bottle.

Myth: Dogs and humans have sharply differing protein metabolisms.

Since the creation of modern-day pet food companies, the key to selling dog food or livestock grade supplements has been to trick fanciers into believing a major difference exists between the protein metabolisms of dogs and humans. Don't believe it - it's a lie. It's nothing more than an old myth spread through pet food companies who control vets, TV and magazines ads to justify the use of inferior - but profitable - raw materials and dirty ways of producing them.

The truth is...protein sources are evaluated by their specific amino acids patterns, and the degree to which the nitrogen molecules contained in the amino acids are retained in the body. That's why science refers to these protein tests on humans and dogs as nitrogen balance studies. Animal meat is merely a source - a delivery system - of amino acids. So are eggs and other protein sources.

The research record of the two species reveals profound similarities in important respects. Adjusting for some differences, there's very little difference between the protein quality criteria and overall protein metabolism between human and dogs. The newest studies confirm this even more. In fact, some of the key canine protein nutrition researchers also conduct human protein research.

ESSENTIAL AMINO ACIDS REQUIRED

HUMAN	**CANINE**
Arginine	Arginine
Histidine	Histidine
Isoleucine	Histidine
Leucine	Leucine
Methionine	Methionine
Phenylalanine	Phenylalanine
Tryptophan	Tryptophan
Theroine	Theroine
Valine	Valine

Myth: Meat protein is the best for dogs.

Anyone who's taken an entry-level nutrition course or read canine nutrition books recalls the perfect protein for dogs has traditionally been...the egg. That's right, "Nature's perfect protein" comes out of the lowly chicken, not from the meat of exotic wild game. There are several reasons why egg protein is so highly regarded.

First, in every test of protein value (NPU, Biological Value, etc.), egg tests out better than meat, usually 8-10% better. The reason for this superiority is the same reason milk protein is so highly regarded - egg supports tissue and vital compound growth at very high levels in nature. The egg is the ideal packet of protein/energy and other nutrients throughout the natural world. Wild predators, including man and wolves, love to come across eggs - a real treat and survival booster.

So why aren't eggs used more in canine nutrition? The answer is a 4-letter word - cost. Dog food and supplements use livestock grade ingredients, unfit for humans. But even livestock grade eggs are too expensive for pet food companies and livestock grade supplements. Livestock grade eggs carry an unacceptable risk of Salmonella, as you've seen on TV shows and as reported by the CDC (Centers for Disease Control). Human grade USDA approved eggs are much more pure and

safe, but are more than twice as expensive as livestock grade eggs. If you can afford it, purified egg whites in the sports nutrition department of health food stores are an extremely good choice for dogs - a great source of protein, but expensive.

The meat used in dog foods has largely shifted from beef to chicken. That's because the use and production of chicken has exploded in the last decade while beef production has actually fallen. Livestock grade chicken is inexpensive. If the argument is to provide the kind of meat protein dogs get in the wild, then meat sources closer to venison, elk, etc. would be indicated. The closest to the meat in wild diets is probably not chicken, but red muscle meat from human grade beef.

But...the meat used in dog food has real drawbacks, far more than most realize. There are some little secrets in the pet food industry they'd rather not have you know, like the 4-Ds. It's not a singing group, it stands for dead, diseased, dying and disabled animals that can be used in pet foods. In other words, animals with pus, tumors, viruses, bacteria and worse are thrown in with other unfit for human meat. All mixed up real nice. There are rumors that just don't go away of dead dogs being brought to rendering plants and processed down into animal fat, which is sold to pet food companies.

So don't think the meat you feed your pooch in dog food or livestock grade supplements are the relatively clean meats you see in the supermarket. It may be inferior livestock grade meat, or can be made in livestock conditions, which greatly raises the potential for contamination. Dangerous bacteria like e.Coli grow very, very fast in livestock grade animal proteins in dirty mixers. Beware - it's much more common than you'd like to believe - it's already occurred. Almost every week another story comes out on e.Coli dangers. Livestock grade is not ideal for athletes, human or canine. If it were, dogs could just eat more dog food to increase health and performance. But livestock grade products are the problem, not the solution.

After all, you give dietary supplements to dogs with the goal of providing some nutritional edge dog food can't. But if the supplements are made of the same livestock grade meat as dog food, or are produced in livestock conditions, how can they work any better than dog food?

Myth: Whole meat proteins are the same as predigested meat protein.

A cornerstone of basic food chemistry is the difference between predigested proteins and intact, whole proteins - they're NOT the same. In fact, they're the opposite of each other.

Whole proteins as found in natural protein-rich foods like meat, eggs, milk, etc. are characterized by long strings (peptide chains) of amino acids which are connected to each other by a molecular glue of peptide bonds. The longer the peptide chain, the longer the protein source takes to be processed in the stomach into smaller units that the body can then absorb and use. Stressed dogs and humans often have a reduced ability to make use of dietary protein, and expensive protein can be lost in urine and feces.

However, partially predigested proteins are different. These begin as the same protein sources listed above, but are treated with either a highly controlled acid or preferably, enzyme bath - the same types your body produces to digest protein. This predigesting process works like chemical scissors to cut the long chain peptides into smaller groups of amino acids. This saves the body the chore of breaking down proteins, which can make a real difference to highly stressed individuals, human or dogs. That's what predigested (hydrolyzed) protein is all about.

The ideal number of amino acids in a peptide group is 2 to 3, called di and tri-peptides. The latest

generation of milk proteins from 1982 is engineered to produce this profile. Such amino acid groups are rapidly, gently and evenly absorbed and used at ultra high rates. Medical foods have used di and tri peptides in milk hydrolysate proteins for decades by companies like Ross Labs, Mead Johnson, etc. For human athletes, UNIPRO Amino 1000's was the first commercial milk protein broken down into peptides like this.

If meat was superior to milk proteins for delivering nitrogen to the body, canine or human, then there would be dozens of products in the marketplace of beef, liver and chicken amino acids. Fact is, liver tabs--once a mainstay for weight athletes--are difficult to find these days. It's not because nutrition companies won't make money with meat supplements; not because the profit margin is not there, but because compared to today's milk protein peptides, the liver and other meat supplements just don't hold up. It's much easier to fool dog fanciers than today's athletes who have direct access to so much scientific information.

Myth: Milk proteins are just for babies.

The notion that milk protein has value only for babies was alive and well - 20 years ago. Today, serious sports nutrition students, researchers and informed athletes regard this idea as an outdated joke. This myth is so discredited, the author behind these sayings might have remembered the old saying that it’s better to be thought ignorant than to open your mouth and prove it.

Milk proteins represent an awesome survival package for young mammals, supplying much more than amino acids and nitrogen, which other proteins are limited to. Mammals have to grow large, complex brains and have rapid metabolisms. Hence, they need a head start in life that enables them to survive long enough to learn the lessons they need to make it. Mammal milk has evolved to fulfill this role by not just delivering nitrogen to muscle tissue, but also IGF growth factors, immunity and antimicrobial factors.

Milk nutrient profile varies according to species. For example, cows milk has 3 times the protein that human milk does, while seal milk has many times more fat. The flavor of the milk can depend, to a degree, on what mom eats, and that first taste may shape food choices later in life.

Nutritionally, cow's milk is of high biological value for both humans and dogs. In milk, a little over 6% is protein. Of this, 80% is casein, a high quality protein. The remaining 20% is literally the cream of the crop--whey; or as it's technically known, lactalbumin. Whey is a complete protein that contains an extremely high content of branched-chain amino acids--the anti-catabolic aminos that protect lean muscle from breakdown. Most formulas use combinations of whey and casein because each offers distinct and unique nutritional properties.

Milk proteins have other benefits for human and canine athletes. They contain IGF growth factors that in some ways mimic the growth stimulation potential of insulin. They also have immunity factors, which boost resistance, and also anti-bacterial properties. They may also dull the pain associated with intense physical training.

The newest generation of milk proteins filter casein and whey to a very high degree using osmotic, ion and charcoal filtration to remove almost all the lactose and fat. This process retains the remarkable benefits of milk proteins, while bypassing downsides.

Scientists studying the benefits of milk proteins for humans include: Drs. Winitz, Sedan, Graff, Stephens, Randall, Gallager, Silk, Adibi, Matthews, Ehlamn, Gimble, Smith, among others.

· **Milk protein helps when survival is on the line.** When you're very ill with severe burns, malnutrition, coma or deep infections, your body wastes away in a catabolic state in negative nitrogen balance. In many cases, unless you can deliver enough nitrogen to the body, you die. To provide replacement nitrogen to help you survive, clinical medicine uses milk proteins almost exclusively--not meat. And have for 50 years. Today, it has gotten so advanced that various milk proteins are engineered to meet the demands of specific illness.

· **Milk protein helps increase muscular performance and recovery.** Milk protein peptides are very rapidly absorbed, deliver nitrogen to muscle at extremely high rates--all essential to meet the demands of heavy training. But they also contain immune factors, which tend to fall during workouts. In this way, milk protein peptides may actually boost immunity of athletes. Also, they contain natural painkillers, which may help reduce soreness after workouts.

In 1980, we began using milk peptides on dogs, then began providing them to human athletes. At first the question was what athletes take these amino acids. Sports nutrition science and use has grown very large since then. Yet almost every protein source from Power Bars to Met Rx to Metabolol to Opti Fuel uses milk protein peptides. In the NFL, Olympics and virtually all other serious athletic environments, athletes take milk protein peptides as a major protein source-something unheard of in 1980. 16 years later, the question is who does not take milk protein peptides.

The public awareness of the power of milk peptides may be quite new, and the use of them by human and canine athletes may seem even more recent. Nevertheless, their highly successful use in medicine and research for at least 70 years is beyond dispute. All that we did is take them out of hospitals and labs and give them to athletes, as we did with glucose polymers (Carboplex, Carbo Fuel, etc.) New application of an old idea, that’s all.

The fact that milk supports growth and tissue repair at a rate like no other time in life testifies to its nutritional power. That's the key to the effectiveness for both eggs and milk proteins--they're both growth mediums. By retaining those positive growth and nutritional properties, while largely getting rid of lactose, today's milk peptide proteins are ideal for both humans and dogs.

By the way, research from Russia, and later real world lessons in America, have proven that eating like a baby--that is taking high nitrogen protein every few hours--is the ultimate for nitrogen balance, faster recovery, lowered cortisol, elevated testosterone and leanness for today's elite athletes. We were promoting this years ago when humans were stuck in the "meat's the way to go myth" in the 1970s. Much, if not most, of the protein intake for today's athletes is milk proteins. Multiple feedings are ideal for dogs too, for the same basic reasons, although they don't require such frequent, almost IV intakes of protein nitrogen.

So when you tell today’s' athletes that they eat like babies, it's a compliment. And one of the cornerstones of modern day human sports nutrition strategies.

Myth: There's no proof that milk proteins are effective on dogs.

OK. Say you’re not involved in sports nutrition research, and you're not a Ph.D. in fields of study relating to the area. If you looked up the subject of milk protein use on dogs in scientific journals, how long would it take to realize the fact that there's many studies showing conclusive proof dogs thrive on milk proteins. It would take about 20 seconds.

The scientific evidence involves two main uses of milk protein for dogs:

First, scientists have studied various types of milk proteins on dogs to determine the biological value, digestibility, and overall protein value of these proteins on dogs. Even down to the point of how many milligrams of milk protein per lb. of body weight is ideal for various stages of life. The milk protein studied varies from skim milk to highly purified milk protein peptides.

Second, milk proteins are used in research to feed lab dogs undergoing tests in other areas such as creatine intake, etc. Milk proteins are ideal for this because of their purity, ease of storage, high utilization, etc.

And for centuries, farmers have mixed farm milk with chicken scratch grains and other ingredients as a makeshift dog food.

Before any one reading this article was born, dogs were eating and thriving on milk proteins. This is not new, although it is not widely known outside of isolated scientific circles because of dog food propaganda. But the same could be said of predigested carbohydrates and fats, creatine, branched-chain amino acids, pyruvates and other compounds until fanciers learned their benefits. At first, it's buried away in scientific studies and some folks say it just can't exist because they find it and even if they could, they can't understand it. But that's what always happens when new ideas and scientific facts threaten superstitions and old myths.

From the 1920's until present, a partial list of the scientists who have used milk proteins on dogs includes Drs. Rose, Milner, Arnold, Kendall, Johnanson, Benedict, Burns, Payne, Schad, Gessert, Phillips, Miller, Cowgill, Ontkno, Garton, LeFaivre Kade, among others.

For the authors of these myths not to recognize this basic, fundamental research reveals a total and complete lack of knowledge in this area, or they are unaware these studies even exist, or is unable to understand them. Either way, there's no excuse for somebody writing an article under the disguise of a nutrition company not to acknowledge them. It's like an auto mechanic not knowing about Chilton's car reference book while he's trying to convince you that the radiator hose he's holding is really a fuel pump. It's that bad.

It's clear that milk proteins for dogs are neither new nor untested. Dog food companies want you to think so and buy into their meat myth. The first widely commercial milk protein hydrolysates were introduced by UNIPRO in 1982; I helped develop them. These amino acids literally revolutionized sports nutrition for dogs and humans. You cannot go into a gym or health food store that does not contain a wide variety of milk proteins in the form of powders, drinks, tabs, caps, bars, etc. Since then many dogs - and their owners - have taken these amino acids, and the milk proteins in Metabolol and Metabolol II, Opti Fuel and others with consistently excellent results.

By the way, the research with milk proteins on dogs produces very similar results as that with humans, as it does with meat, as it does with eggs. Pet food companies would rather you did not know this basic fact to keep their myths alive and making money.

Myth: Lactose is a toxic chemical.

Lactose is a naturally occurring sweet-tasting carbohydrate found in the milk of mammals, including dogs and humans. The amount of lactose in milk varies between species. Young mammals use lactose very efficiently as a fuel source. But as mammals age, some adults may lose the ability to use lactose because an enzyme called lactase can decline. There are popular enzyme supplements like Lactaid that allows these adults to tolerate lactose and thus enjoy milk products. Lactose is part of our survival package for humans and dogs.

Unprocessed milk protein contains about 75% lactose, quite a high amount for both adult dogs and humans. However, the modern engineered milk proteins are highly filtered to remove not just lactose, but also fat and allergens. Not only does this make these milk proteins the purest protein you can buy, it also makes them extremely low in lactose; low enough for virtually any canine athlete to benefit without distress, even in large amounts.

Dogs have eaten milk proteins with varying amounts of lactose for at least 75 years in research studies, and much longer in the real world with success. Another dog food myth bites the dust.

Milk Protein Drawbacks

If milk proteins in general, and the newest generation in particular, are so useful to dogs, and are also proven in medical and sports nutrition, why aren't they used more in dog food. The simple 4 letter word, cost.

Livestock grade proteins are cheap, really cheap compared to purified milk protein peptides, which generally cost about 3-4 times more per lb. Besides, people have been trained to accept inferior livestock grade meats in dog food and livestock grade supplements for so long they think (and hope) nobody will notice the difference or get hold of the real facts. And unless you work out yourself or read scientific research, you won't know that cleaner proteins are now available for both you and your dog.

Summary

There are other, equally backward mistakes. But highlighting a few of these myths gives you the idea of how inaccurate and out of date this dog food propaganda is.

At its core, this is not a meat vs. milk protein debate. That's the simple-minded approach. Both nutritional researchers and practitioners agree the most effective approach to delivering superior protein nutrition is a combination of high quality protein sources. A balance, of course.

- **Canine and human protein and amino acid metabolism and requirements are closer than pet food companies want you to believe.**
- **Meat is a good source of amino acids; so are egg and milk proteins.**
- **A blend of high grade protein sources is probably superior to any single source alone; various proteins sources contribute distinctive features of amino acid profiles, peptide availability, etc.**
- **Whatever protein sources are used, they should be human-grade and not livestock grade.**