



Equine Nutrition for the 21st Century

Why nutritional needs for horses have changed

By Dr. Odette Suter, DVM

Today's horse magazines are filled with articles addressing metabolic syndromes in horse, such as Insulin resistance, Cushing's Disease, Obesity, Equine Polysaccharide Storage Myopathy [EPSM], Shivers, Degenerative Suspensory Ligament Desmitis [DSLSD]/Equine Systemic Proteoglycan Accumulation, Equine Gastric Ulcer Syndrome, Founder and Laminitis. Once uncommon or even unknown, these disease processes are now dominating the equine media and medical research. Just like humans, many horses have become carbohydrate sensitive or even intolerant. Horses with restricted access to grass or those needing to wear a muzzle out in pasture are quite common nowadays. Need for GI ulcer protection and treatment, joint injections and joint supplements, anti-inflammatory drugs, etc. have considerably increased in the past couple of decades.

What went wrong?

In this article, I would like to provide you with just a little bit of information to better understand how the nutritional needs of today's horses have changed. I will also tell you about simple steps you can take to keep your horses healthy or improve their well-being and ability to perform at their full potential. Although some of the following may be new information for you, there is a large base of scientific research and up to date knowledge to back it up.

What Changed?

Since World War II, environmental and nutritional influences on our horses have changed greatly. Production of synthetic chemicals has increased from one million pounds per year to 140 million pounds with the steepest raise occurring in the past couple of decades. More than 84,000 chemicals appear in consumer products, agriculture and industry. 24,000 of those are pesticides alone that potentially end up in the food our horses eat. Use of pesticides has increased more than 300 percent since 1964 without change in acreage used for growing crop. These chemicals are finding their way into the bodies causing toxicity by affecting biochemical processes, genes, cell membranes, etc. Rats given fluorinated drinking water gave birth to hyperactive babies also exhibiting signs of retardation and other cognitive defects. Onset of puberty in girls has dropped to age seven with some showing signs of hormonal changes at age three. This is just one of the many effects of xenoestrogens (estrogen mimicking chemicals) on our population. A scientist from the Smithsonian Institute published a paper showing that cancer outbreaks in fish started after distribution of synthetic chemicals in the early 20th century. Today, cancer prevalence has greatly augmented and occurs in increasingly younger individuals. Hardly any mention was made of cancer in animals only 30 years ago. Today almost every vet school has an oncology department. Equine Cushing's disease was only seen in old horses whereas today horses of all ages are affected.

The U.S. Department of Agriculture "attributes most major health problems to nutritional deficiencies found in the modern diet." Many horse feeds have become deficient in essential nutrients in addition to being contaminated with pesticides, herbicides, heavy metals, toxic mineral forms, and preservatives. The process of extrusion and pelleting destroys vitamins and enzymes essential for digestion and other physiologic processes. Extruded feed is heated to 350 degrees Fahrenheit, the temperature of deep fat frying, and turns oils and fats into highly inflammatory trans fats.

You can see from just a few examples that our world has changed significantly. Food, water and air are not what they used to be and our soils have become depleted and contaminated. As a result our horses are exposed to many toxins. They have also become deficient in essential nutrients such as

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minerals, vitamins, protein and other nutrient needed for proper functioning of cells.

Effects on the Body

The thyroid gland is one of the hormonal glands that takes the biggest hit. Being responsible for metabolic rate, it affects all functions of the body including immune system, digestion, liver function, musculoskeletal function, behavior, etc. Many horses have a low body temperature as a result of the thyroid being affected by xenoestrogens, arsenic and the hundreds of toxins found in food, water and air. If you remember chemistry class you may recall that a lower temperature will decrease the speed of chemical reactions. The same is true for biochemical processes in the body. As everything slows down, the body loses its ability to respond appropriately. Once a critical threshold is reached, malfunction starts. Think of it like a cup of tea. It will overflow once it is filled all the way to the rim and one more drop is added. When the body's ability to compensate is exceeded, symptoms begin to show up.

Common signs of a reduced metabolism and dysfunction are thrush, rain rot, and other infectious diseases. If the body temperature is not high enough opportunistic pathogens are free to enter the body. If the immune system is overworked from trying to rid the body of foreign substances (toxins), there won't be a sufficient response to parasitic invaders. Weight gain, "laziness" and hypersensitivity can also be signs of metabolic insufficiency and biochemical dysfunction. Other indicators can be grouchiness, hind end weakness, poor hair coat, allergies, hay belly, poor top line, sore muscles, GI problems, etc.

Take nerves as an example. If they are lacking essential nutrients such as electrolytes and protein and there is insufficient heat, they are unable to fire appropriately. Thus the muscles they innervate may not function quite the way they should and become weak. A weak muscle makes a horse more prone to injuries such as tendon and ligament damage. Often there will also be an imbalance between opposing muscle groups, causing misalignment of joints with arthritis and need for joint injections as a consequence. As Kerry Ridgway, DVM always says: "bones can only do what muscles tell them to do."

In the fall, the metabolism slows down in preparation for the winter. An already compromised horse may be more prone to sand colics because an already decreased gastrointestinal motility will slow down even further. As a result the gut accumulates more sand than it would at other times of the year.

The point is that everything is connected to and affected by everything else. Therefore we need to take into consideration the environment our horses live in and provide them with the assistance they need to stay healthy in a polluted milieu.

Steps We Can Take

The big question is 'how do we accomplish that?' As scary as the truth may sound, not all is lost. Basically, if we minimize toxic exposure, detoxify present body burden and provide good quality nutrition, our horses' health can be maintained and improved. It is that simple.

We can start by filtering the water we give our horses. An Environmental Working Group analyzed more than 20 million water samples and found hundreds of pollutants including drug residues in U.S. tap water. Well water is often contaminated as well and should be tested to assure good quality. By installing filters we can significantly reduce toxin ingestion via the many gallons of water horses consume every day. Green and black water hoses leach plastic and other chemicals into the water. They are not approved for drink-



ing water. Only white RV water hoses should be used.

Another simple action we can take to clean up our horses' homes is to eliminate or at least decrease the use of chemicals we use around and on them. My motto is to not buy anything with ingredients I don't know. Fly sprays can be replaced by fly predators. Beneficial microbes can enrich soils and decrease pests, diseases and the need for weeding and agricultural products.

Certain salt licks are also a common source of toxins. In 1976, legislation came to pass, which allows adage of toxic waste chemicals to salts and feed grade minerals. Best and cleanest are Himalayan salt licks harvested from deep beneath the Himalayan Mountains and hidden from today's pollution.

And last but most certainly not least is the importance of the food we feed. Food either harms or heals! Hippocrates, the father of medicine recommended "Let food be thy medicine and medicine shall be thy food". Without the proper building blocks a house can't be built. The same is true for the body. Cells need the proper amount and quality of nutrients to be able to function properly. In today's world those requirements have changed. What used to work years ago may not work anymore today. Legumes (alfalfa, soy, clover) were tolerated well, but today's toxic bodies may not be able to compensate for their goitrogenic effects. Goitrogens interfere with proper thyroid function. Phytoestrogens (plant estrogens) found in these same plants can become intolerable, because the bodies are already overwhelmed by estrogen mimicking chemicals. Feeds with high sugar content too have become a problem, because toxicity affects the body's ability to process sugars. Amino acids that used to be in the non-essential category have become essential because a compromised metabolism is not able to make those itself in sufficient amounts. There is also an increased need for supplementation of vitamins, minerals, protein and other nutrients, because plants have been altered and soils have become depleted and contaminated. Iron and manganese supplementation has become obsolete, because these elements are over-represented in the environment. Magnesium needs, on the other hand, have increased.

Thus we need to take into consideration the world we live in and inform ourselves about the ingredients of the feed we give our horses. Wheat middlings for example are similar to granary floor sweepings and often contain dust and mold spores. Minerals need to be in organic form in order to be absorbed. Inorganic chemical forms such as sulfates, oxides and carbonates are not very bioavailable. Used in the quantities required to overcome today's mineral deficiencies, these become downright toxic. Copper sulfate for example is a drain cleaner and used to kill algae. Epsom Salt, which is magnesium sulfate, is a purgative and is therefore not absorbed in the gut. As mentioned above, feed-grade minerals can contain high amounts of heavy metals and other toxic chemicals. Only the pure USP grade (pharmaceutical grade) minerals should be fed to a horse.

Another important nutrient is protein. Quantity and quality of protein play a crucial role in the horse's ability to remain healthy or regain health. 80% of a horse's dry weight is protein! L-Lysine and DL-Methionine are often added when good quality protein is low.

Fillers, byproducts, preservatives and taste enhancers may enhance a feed's palatability, but they do nothing to support health. In fact they tend to contribute to disease by diluting digestive juices for example and thus affecting digestive effectiveness and microbial flora.

I hope that this little bit of information will support you in your endeavor to prevent disease. Proper nutrition and a clean environment are the only health insurance. May your horses live a healthy and happy life and may you enjoy them as long as possible.