



## Horses Need Mineral Supplements Too

By Jackie Nix

Most horse owners go to great pains to provide good feed for their horses but often mistakenly overlook proper mineral nutrition. Mineral nutrition is especially important for proper hoof growth and soundness as well as immunity, reproduction and exercise performance. Good mineral nutrition is critical for maintaining healthy, productive horses.

### **What minerals are needed and what do they do?**

Minerals are loosely grouped into two categories: the macro-minerals and the micro- or trace minerals. Macro minerals include: calcium, phosphorus, magnesium, potassium, sulfur and salt and are needed in relatively large amounts in the body. The trace minerals include: cobalt, copper, iodine, iron, manganese, selenium and zinc and are needed in very small or “trace” amounts in the body. While adequate amounts of all of the above minerals are important to proper nutrition, I will focus on the trace minerals, cobalt, copper, selenium, manganese and zinc for the remainder of this article.

Cobalt. Cobalt deficiency is rare in horses; however, cobalt supplementation has been shown to enhance microbial fiber digestion. This results in increased available energy derived from forages. Intestinal organisms also use cobalt to manufacture vitamin B-12 used by the horse.

Copper. Copper deficiency is widespread in across many parts of the United States. Copper is essential for hoof integrity, enzyme functions, immunity, connective tissue metabolism and iron metabolism among other functions. Deficiency symptoms include poor stress tolerance, exercise related problems including sub par performance, frequent infections, and poor wound healing. Copper deficiency may also play a role in the development of arthritis, tendon and ligament problems, as well as poor hoof quality. High levels of iron, sulfur or molybdenum in the soil or additional feed supplements can further exaggerate these deficiency symptoms.

Copper has an important role in the activity of antioxidant enzymes. Exposure to drugs, chemical preservatives and inhaled impurities in the air may generate substances called free radicals. These electrically imbalanced molecules attack normal tissues. The damaged cell in turn attacks its neighbors, setting up a chain reaction of cellular damage. A healthy horse constantly fights off bacteria, viruses and other organisms. In fighting off these invaders, free radicals are formed. Free radicals may actually be responsible for many of the familiar and uncomfortable symptoms of infection/inflammations (pain and swelling) and such things as a sore throat, runny nose and other symptoms of viral infection. Exercise also regularly produces free radicals that may cause soreness and fatigue.

Copper is also needed for synthesis and maintenance of connective tissue, such as ligaments, tendons, bones and cartilage. Inadequate copper intake in mares and foals has been implicated in

the likelihood of developmental bone disease, including OCD (osteoochondrosis dessicans). Copper-dependent enzymes are responsible for the structural integrity of various hoof tissues. Because of copper's important role in the development, repair and maintenance of bones, joints, tendons, ligaments and hooves, supplementation is especially recommended for pregnant mares, young growing horses or physically active horses.

*Manganese.* Manganese is essential for energy metabolism, reproduction and immune function. Manganese is also vital for the formation, maintenance and repair of joint cartilages, including those found in the internal structure of the foot. Because of the importance for joint development and maintenance, supplementation is especially recommended for pregnant mares, growing horses and exercising horses, as well as horses with arthritis.

*Selenium.* Selenium is an anti-oxidant that works in conjunction with Vitamin E to prevent and repair cellular damage caused by free radicals in the body much like the antioxidant enzymes described above with copper. Selenium and/or Vitamin E deficiency has been shown to impair immune response. Selenium is also associated with thyroxine, a thyroid hormone that regulates metabolism, reproduction, circulation and muscle function. Selenium also protects the body from heavy metals by forming complexes to render them harmless. Because of toxicity risks associated with over-supplementation of selenium, it is important that you read and follow label directions regarding use of supplements containing selenium.

*Zinc.* Zinc also plays an important role in the function of antioxidant enzymes (like copper) and helps protect the body from damage caused by free radicals. Zinc is extremely important to the functioning of the immune system in both fighting off invading organisms and to controlling symptoms related to inflammation. Health of the skin and feet is directly related to zinc. Zinc is also involved in energy metabolism, nerve function and bone and joint health.

Inadequate zinc levels may result in poor tolerance to stress, exercise related problems, frequent infections and poor wound healing. Long-term zinc deficiency may contribute to decreased fertility, poor wound healing, poor athletic performance (relating to defective energy metabolism) and increase susceptibility to infections,

### **But don't they get what they need from forages?**

While most horses receive adequate mineral levels from available forages in order to survive, the vast majorities are not receiving the mineral nutrition needed for optimum health and performance. An important point to remember is that the mineral content of forages are limited by the mineral make-up of the soils. So if it's not in the soil, it can't get into the plant. A majority of soils in the United States are marginally to severely deficient in selenium and copper among other minerals. Also, soil types vary from farm to farm and even field to field. No one soil type provides optimum levels of all the minerals needed by horses; therefore, a mineral supplement is always advisable. Other variables such as plant species, plant maturity and climate conditions will also play a role in the mineral content of available forages.

### **What if I feed trace-mineralized salt?**

Unfortunately, trace mineralized salt in loose or block form will not meet all of the nutritional needs of horses. Trace mineralized salt is mostly salt (typically 92 to 98% salt) and contains relatively low levels of trace minerals as compared to complete mineral supplements. Because of the high salt content, consumption of these supplements will be very low; resulting in sub-optimum intake of needed trace minerals. Plus these supplements do not contain added vitamins

or macro-minerals. For these reasons, I strongly recommend use of a complete mineral/vitamin supplement.

### **How do I provide proper mineral nutrition?**

Just, like humans are encouraged to take their mineral/vitamin supplements every day, it is important to provide a complete mineral/vitamin supplement to your horse every day. This is best accomplished with a complete free-choice mineral/vitamin supplement. Sweetlix<sup>®</sup> offers a line of equine supplements containing minerals and vitamins designed especially for the nutritional needs of horses. Sweetlix<sup>®</sup> supplements have been reformulated to deliver better results than ever and deliver 100% of the daily-recommended amounts of necessary trace minerals and vitamins.

Sweetlix<sup>®</sup> offers an equine supplement for every situation from fly control to protein supplementation to mineral/vitamin supplementation. Sweetlix<sup>®</sup> supplements come in many forms including loose mineral, pressed block and poured block. Contact your local Sweetlix<sup>®</sup> dealer, visit [www.sweetlix.com](http://www.sweetlix.com) or call 1-87SWEETLIX for complete information on the variety of Sweetlix<sup>®</sup> equine supplements available.

*References available upon request.*

*Jackie Nix is an animal nutritionist with Sweetlix (<http://www.sweetlix.com>). You can contact her at [jnix@sweetlix.com](mailto:jnix@sweetlix.com) or 1-800-325-1486 for questions or to learn more about the Sweetlix line of mineral and protein supplements for horses, goats, cattle, sheep and wildlife.*

August 2005