

Selenium: What does it do and why should I supplement?

Wendy Krebs, DVM

Selenium is an important trace mineral, which acts as an antioxidant in the body. Antioxidants are chemicals that serve to prevent cellular damage from the free radical molecules that are by products of normal oxygen metabolism. Deficiency in selenium can cause a variety of problems in horses, including myopathy (muscle disease), impaired movement, difficulty in suckling and swallowing, respiratory distress and impaired heart function. The most severe problems are seen in newborns and can be fatal. White Muscle Disease, for example, which develops as muscles degenerate from selenium deficiency, is most commonly seen in neonates. It is so called because affected muscle appears very pale in color. Bloodwork of selenium deficient horses may show elevation of muscle enzymes, as well as GGT, which relates to liver and other organs' function.

The soil of much of Western and Central Oregon, and parts of Washington, is quite deficient in selenium. The area around the Great Lakes and much of the Northeast part of the United States is also low. This means that forages grown in these areas are also generally low in selenium, so animals fed on them can develop deficiencies. Other parts of the country can actually have high soil selenium, so knowing your region's status is key in deciding whether you should be concerned with testing or supplementation.

So how do you tell if your horses have adequate selenium or not? Testing of whole blood samples is the most accurate, and is a commonly-performed procedure. Your vet draws blood and sends out to the laboratory. Results are generally available within one week, and can be used to determine whether the horse's diet and/or supplements are providing adequate levels.

Selenium is well-absorbed via the small intestines in most animals, and many grains and vitamin/mineral supplements are fortified with selenium. It is important to be aware of how much selenium your horse is ingesting from all the various sources in its diet. The law limits how much selenium can be included in many feeds, since very high levels of selenium are toxic. Therefore, if your horses eat only a small amount of grain, they are unlikely to be getting their full daily requirement from the grain alone. In these cases, you should supplement with a vitamin/mineral supplement. Vitamin/mineral supplements contain extremely varied amounts of selenium too, so read the label to find out how much is included in each serving. In this part of the country, between 1-3 mg of selenium per day are generally adequate and safe for most horses.

Many mineral salt blocks or loose mineral salts also contain varying amounts of selenium, and some owners depend on these as a supplement. The pitfall with this is that horses cannot sense that they are deficient in selenium, and therefore don't seek it out actively. Their consumption of these mixes is based only on their taste for the salt, so if they consume adequate salt from other sources, they won't consume enough of the block or mix to satisfy their selenium needs. It is preferable to provide selenium

as a daily supplement that you know the horse regularly consumes, i.e., mixed in grain or a palatable supplement.

Horses that are found to be deficient in selenium may require injections of selenium initially if their values are quite low, and then the injections can be followed up with oral supplementation. It's important to be aware that selenium acts in concert or synergistically with another important antioxidant, Vitamin E. Horses can subsist with low selenium if their Vitamin E is adequate, as it has many of the same antioxidant functions in the body as selenium does. If a horse is deficient in both Vitamin E and selenium concurrently, they may develop more severe signs of disease. Talk to your veterinarian about whether your nutritional program is adequate for your horses' particular needs, as breeding and performance animals may have very different requirements from pleasure horses or pasture ornaments.