

Selenium – Why is it so important for our horses?

Dr. Jessie Evans

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What is Selenium?

Selenium is an important trace mineral that acts as an antioxidant in the body. Antioxidants are chemicals that function to protect the body's cell membranes from being destroyed by free radicals, which are by-products of normal oxygen metabolism. Selenium works synergistically with vitamin E, another important antioxidant.

Why is this trace mineral of concern?

The normal blood value of selenium in a horse is 0.17 – 0.25 ppm. Unlike most minerals that have a broad safety range, selenium has a very low threshold of safety for horses--only a few parts per million beyond or below the recommended levels can be problematic. Deficiency in selenium can cause a variety of symptoms in horses, including myopathy (muscle disease), impaired movement, difficulty in suckling and swallowing, respiratory distress and impaired heart function. In mild deficiencies, the only symptom might be an increased susceptibility to disease due to a depressed immune system, and/or decreased fertility in breeding horses. With severe selenium deficiencies, we see weakness, impaired movement, difficulty in swallowing, impaired cardiac function, and respiratory distress. The most severe problems are seen in newborns and can be fatal. White Muscle Disease, for example, develops as muscles degenerate from selenium deficiency. It is called White Muscle Disease because affected muscle appears very pale in color.

The effects of selenium toxicity can be worse than the effects of a deficiency. Signs of selenium toxicity include patchy sweating, blind staggers, colic, diarrhea, and increased heart and respiration rates if acute, or when chronic, loss of hair, especially in the mane and tail, the cracking of hooves around the coronary band, and occasionally hooves that slough off completely. Because of the consequences of too little or too much selenium, it is very important to pay attention to the amount you are supplementing your horse.

How much selenium are they getting from forage?

The selenium content of feeds varies depending on where the plants were grown - across North America, the soil content of selenium fluctuates significantly. Some areas, such as Central Oregon and parts of Washington, are so selenium-deficient that crops grown there are considered to contain no selenium at all, so animals fed on them can develop deficiencies and require supplementation. Some locations have adequate selenium in the soil, and others actually have toxic concentrations of selenium. Knowing your region's status is key in deciding whether you should be concerned with testing or supplementation.

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.

What if my horse is found to be selenium deficient?

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 is important to note that there is a possible fatal reaction to vitamin E/selenium injections when it is administered as an intravenous injection, so it should only be administered intramuscularly.

How much selenium should my horse be ingesting per day?

In this part of the country, between 1-3 mg of selenium per day is generally adequate and safe for most horses.

What kinds of supplements are available?

Some complete feeds contain supplemental selenium, but if your horses eat only a small amount of that concentrate feed, they are unlikely to be getting their full daily requirement from the grain alone. In these cases, and with horses that are only fed hay or pasture, you should supplement with a vitamin/mineral supplement. There are many commercial vitamin/mineral supplements available, but they can contain extremely varied amounts of selenium, so read the label to find out how much is included in each serving. 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.