

## **Barnyard Advice: Selenium - Required or Not, Prevention Through Maintenance**

Selenium is a mineral found in soil. Many parts of the entire western United States, including all of Washington State, are deficient in this mineral. A few sections of the USA have normal amounts in the soil and some areas of the east have high levels. It is an essential trace element for the support of life.

When selenium is deficient in the diet, abnormalities can occur. It affects primarily young animals during rapid phases of growth. It can also affect the adult animal on marginal rations or in animals in poor condition because of neglect or chronic disease.

Cattle, sheep and swine are the most susceptible with the horse and goat being the next most susceptible. Poultry can also be affected to a lesser degree. Some signs of deficiencies in the adult animal include retained placenta, abortion, infertility, increased susceptibility to disease, weakness and decreased milk production. Keep in mind these are only some of the signs.

Selenium works in conjunction with vitamin E at the cellular level to prevent a chain reactive auto-oxidation of cell membranes and can lead to the damage of muscle cells. The heart is usually the muscle most affected and the large muscle of the rump a close second.

Clinical signs of deficiencies generally come in two forms. The cardiac or congenital form and the skeletal muscle or delayed form. The cardiac or congenital form occurs most commonly in calves, but also is seen in lambs and foals. Affected animals may be still born or die shortly after birth. The delayed form affects the animal at an early age. They may be weak and unable to rise. If they can stand they are still with a "sawhorse" stance and muscle tremors. Often there is a failure or partial failure of passive transfer (decreased immunity received from mother's milk) and animals will die within 1-4 weeks of birth. (pigs generally 6-20 weeks of age). This can affect animals up to 1-2 years of age.

Treatment and prevention is centered on prevention. When the animal is already deficient or diseased the prognosis is variable. Emphasis should be placed on prevention of the disease. Injectable forms of selenium last around 40 to 60 days and the rise in blood selenium levels is immediate, but this selenium is not necessarily biologically available. Meaning, a "shot" is not an immediate cure. It also takes 3-4 weeks for bloodstream selenium levels to attain normal values following oral administration. So, oral supplements are also not an immediate cure.

Prevention is centered around providing a good balanced feed ration to the animal, especially a pregnant animal. This is accomplished by feeding the pre-mixed complete ration available to all species in today's modern society. Bags of "grain" are not a complete, balanced diet. Find feeds that are designed for each particular species, such as Pig Chow, Goat Chow, Equine Senior, and Sheep Chow to name a few.

Other sources of mineral include blocks or powdered supplements. Ensure the mineral blocks purchased are "selenium salt licks" and not just a "salt block."

Also keep in mind not all animals are alike. For example: A feed intended for the goat or cow has enough copper in it to kill a sheep and a feed intended for sheep does not have enough copper for a cow.

*Reprinted courtesy Debbie Marion, A Country Veterinary Clinic, Belfair, Washington*