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SWEETCLOVER POISONING

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The preliminary symptoms of sweetclover poisoning include stiffness, lameness, dull attitude and swelling beneath the skin (hematomas or blood clots) over all parts of the body but primarily at the hips, brisket or neck. The mucous membranes may be pale, indicating that anemia exists. Blood may be present in the feces, urine or milk, or come from the nostrils, or there may be extensive hemorrhage at parturition. Dicoumarol may pass the placental membrane and cause hemorrhage in the fetus. In some cases the involved animal may die without any visible signs.

The toxic factors associated with sweetclover poisoning may also interfere with reproduction and be responsible for fetal reabsorption, stillbirths, or neonatal deaths. The reproductive problems may exist without clinical signs of toxicosis in the dam.

What Is the Cause?

A substance referred to as coumarin is present in varying amounts in all sweetclover and is responsible for the characteristic odor associated with sweetclover. In sweetclover which is spoiled or damaged the coumarin is converted to a toxic substance called dicoumarol (Bishydroxycoumarin). This dicoumarol will impede the liver utilization of vitamin K, an essential element in the process of blood clotting.

Not all moldy sweetclover is toxic, and the absence of observable mold is not absolute assurance that toxicity (dicoumarol) is not present in the forage. Sweetclover poisoning occurs less frequently from silage than from hay and infrequently in pastured animals.

Dicoumarol in sweetclover forage may remain at toxic levels for three to four years of storage. Dicoumarol toxicity has never been observed in alfalfa or other clovers. If animals are fed sweetclover forage for three weeks with no signs of toxicity being exhibited, the chances of toxicity are unlikely.

Host Animals

The mature animal has a greater resistance to sweetclover toxicosis than the young animal. Newborn calves are usually deficient in vitamin K, the formation of which is impeded by sweetclover toxicosis.

Though sweetclover poisoning may occur in any of our domestic animals, the more selective eating habits of horses and swine decreases the possibility of sweetclover poisoning in these species.

Prevention Based on Management

Sweetclover that is spoiled or moldy should be fed with caution. The farmer or rancher may also have the feed assayed for its dicoumarol content. A specific dicoumarol analysis is available from the Department of Veterinary Science (Toxicology Laboratory) at North Dakota State University. A minimum of two to three pounds of the sweetclover hay or silage is required for the analysis. It is imperative that the sample be representative and include the moldiest sweetclover which can be found.

One method of avoiding toxicity is by planting only the low- coumarin varieties of sweetclovers. Avoid contamination of pastures or hayfields with yellow (Melilotus officinalis) or white (M. alba) varieties which contain substantial levels of dicoumarol. Other preventive measures include stacking or baling sweetclover only when it is well cured and dry and avoiding the use of large, tightly bound bales with sweetclover.

When sweetclover is suspected of being toxic it may be fed for seven to 10 days and then replaced with alfalfa for an equal period of time. The intermittent feeding of alfalfa appears to be more effective in neutralizing the toxicity of sweetclover than the feeding of equal amounts of forage simultaneously. Sweetclover should not be fed for

at least two weeks before the start of parturition and during the calving period. Supplementation with vitamin K will aid in counteracting the effects of dicoumarol but is less practical than replacing the sweetclover forage with alfalfa. Adequate calcium supplementation will aid in the prevention of hemorrhage. Although calcium is not directly associated with dicoumarol toxicity, it remains one of the essential elements in the blood clotting process.

Surgery of any kind should be avoided on animals consuming moldy or damaged sweetclover forage.

Animals exhibiting the symptoms of sweetclover poisoning may be saved by direct blood transfusion from disease free animals which have not consumed toxic sweetclover. Intramuscular administration of vitamin K will aid in counteracting the effects of dicoumarol.

All animals involved should be removed from sweetclover and placed on high quality alfalfa which is high in vitamin K and in calcium.

Veterinary aid should be sought immediately upon suspicion of the presence of sweetclover poisoning as other diseases such as anaplasmosis may appear similar but require quite different approaches for control and treatment. Other molds in forage may also cause hemorrhaging in domestic animals resulting in symptoms that appear very similar to sweetclover toxicosis.

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