

Feeding to Avoid Tying Up

While significant research has been completed in regard to tying up syndrome in horses over the past several years, we are still not to a point where we can effectively prevent or even treat individual horses that exhibit myopathies of one sort or another. Muscular myopathy is multi-faceted and affects different horses in various ways. However, one of the most significant findings has been the identification of soluble carbohydrate sensitive horses. While feeding more than 7 pounds of grain to performance horses has been a common and accepted practice for centuries, we now realize that for some horses, this can be disastrous. Individual horses have a genetic inability to metabolize sugars at the cellular level during exercise. Feeding these horses large amounts of grain and thereby forcing them to attempt to use a fuel source that their bodies are incapable of metabolizing results in them tying up within a short amount of time after the initiation of elevated physical activity. These horses must be fed in a manner that allows them to adapt to alternative fuel sources such as fat and fiber. Reducing the level of soluble carbohydrates in their diets is the key to successful performance; however, a diet consisting of 100% hay and/or pasture simply does not provide enough calories to support elevated training and activity levels. Therefore, the diet for these horses must be carefully balanced to provide a mixture of fat, forage and high-energy fiber sources such as shredded beet pulp. Moderate to low molasses levels are acceptable, but the key is to maintain soluble carbohydrate levels as low as possible, preferably less than 25%.

Even individual horses that have experienced one or more tying up episodes, but may not have exhibited obvious symptoms of being soluble carbohydrate sensitive, have improved when switched to high fiber, high fat, low soluble carbohydrate diets. High fiber, high fat, low soluble carbohydrate diets are also being used successfully to treat and maintain laminitic horses. One of the best products on the market that satisfies the needs of these horses is Triple Crown Senior.

Other nutritional factors that affect horses that experience tying up episodes include mineral deficiencies or excesses, vitamin E and/or selenium deficiencies, electrolyte imbalances and/or deficiencies.

Calcium and magnesium intakes need to be properly balanced with the horse's requirement and each other. Calcium deficiencies at the cellular level results in the muscle's inability to properly contract and relax. Blood calcium levels are regulated hormonally and are dependant on dietary calcium intakes. Excessive dietary calcium intakes result in reduced calcium absorption and may predispose the horse to cellular calcium deficiency during exercise when the availability of calcium at the cellular needs to be at its highest. This affect is further exacerbated if dietary magnesium intakes are marginal or deficient. For this reason, dietary calcium and magnesium levels must be closely evaluated for horses that are predisposed to tying up. The levels of calcium, phosphorus and magnesium in the horse's diet must be maintained as close to requirement levels as possible and feasible without being deficient or excessive.

Many horses that exhibit tying up tend to be sensitive to stress. By definition, these horses are highly susceptible to oxidation during exercise. Increasing dietary levels of vitamin E and selenium as well as other anti-oxidant nutrients such as zinc and copper (especially when provided in organic form) will help reduce the sensitivity of these horses to stress and subsequently to tying up.

Muscular contraction and relaxation is regulated by electrolytes at the cellular level, especially calcium, potassium, sodium and chloride. Of these, the one electrolyte that is most likely to be deficient in the performance horse's diet is sodium. A sodium deficiency not only results in an electrolyte deficiency which adversely affects the cell's ability to contract and relax efficiently, but also results in metabolic acidosis which in turn increases renal secretion of calcium and lowers activity of cellular enzymes. Therefore, maintaining proper levels and balances of dietary electrolytes can significantly reduce the incidence and/or severity of tying up episodes.