

Exercise-induced muscle problems and breed

Dr. Christine King

Question:

I would like to know what besides hay I can feed my mare that does not have a lot of protein. I'd like to start showing her again at 17. If I feed her things that are high in protein she ties up on me if she sits more than 3-4 days.

Answer:

It's a common misconception that high-protein feeds cause tying up, or exercise-induced muscle damage, in horses. It is the *starch and sugar* content of the diet and the mineral and electrolyte components which can adversely affect muscle function; not protein.

The medical term for exercise-induced muscle damage is exertional rhabdomyolysis, or ER. There are many different factors which can contribute to ER; some are genetic, others are management related (diet, exercise program, fitness for the task, etc.). And even if genetic factors are present, management plays a huge part in whether and how severely these genetic propensities are expressed.

I'm assuming from your e-mail address that your mare is a Quarter Horse or one of the related Western breeds. A common cause of ER in Quarter Horses is a condition called equine polysaccharide storage myopathy (EPSM or PSSM). Warmbloods and some of the draft breeds (especially Belgians) are other horse breeds in which EPSM occurs.

Not to get too technical here, but EPSM involves a defect in the storage and utilization of glycogen and other complex sugar molecules (polysaccharides) within the muscle cells. The net result is an interference with muscle metabolism which can lead to muscle cell damage.

In Thoroughbreds and related breeds, a different inherited condition can be involved in horses who tie up repeatedly (recurrent ER, or RER). In Thoroughbreds in particular, the problem involves the movement of calcium within muscle cells during exercise. Calcium is essential for normal muscle contraction and relaxation, so this abnormality in calcium regulation within the muscle cell interferes with muscle function and makes the horse more prone to ER.

And in any breed, selenium deficiency can cause ER, as can gross imbalances in other dietary minerals and electrolytes, especially calcium, phosphorus, magnesium, sodium, and potassium. So, too, can overwork of an underconditioned horse.

Regardless of the horse's breed, the basic approach to managing a horse who is prone to ER involves careful attention to diet and exercise. Feed a diet that is as close to the horse's natural diet as possible. (See Healthy Eating parts I & II.) In particular, avoid feeds that are high in starch and sugars. That includes any bagged feed which lists any sort of grain product in the first few ingredients on the label or which contains a lot of molasses.

Base the horse's diet on good quality grass hay (preferably a mix of grass types) and pasture; feed a good multivitamin-mineral supplement, add extra selenium if you're in a selenium-deficient area, and offer the horse plain salt free choice. If she tolerates alfalfa, then a little alfalfa can be fed in addition to the grass hay. That should meet her basic nutritional needs.

If the horse needs more calories for work than can be provided by this forage-based diet, then consider adding a pound or two of a low-starch, fat-supplemented performance ration. There are now several on the market, including Nutrena XTN and Purina Ultium. But use these calorie-

dense processed feeds *only as a supplement*, when the horse needs more calories than she can get from her forage diet.

As for exercise, if the horse is expected to perform any sort of athletic function, then she should be in athletic training and be exercised at least 5 days per week. It is unreasonable to expect a horse to sit around all week and then perform some athletic activity on the weekend without incident. The general rule of thumb in horses who are prone to ER is to never miss more than one day of exercise at a time (i.e. never skip two or more days in a row). Daily pasture turnout also is important in these horses.

I can't give you any more specific recommendations without seeing the horse and knowing more about her, but this should give you some guidance on how to manage her so that she has fewer muscle problems in the future.

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