

Questions & Answers

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Why is vitamin C not added to my commercial grain mix?

Most of the vitamin C research done in humans has not been found to be applicable to the horse, because humans do not have the ability to synthesize vitamin C in their own bodies and horses do. Many of the current supplements on the market include vitamin C because it has been professed to improve immune function and bone development. Much of the data researchers use to support these claims come from human research because they cannot find the same results in research done on the horse. To this day, controlled research has not been able to show any benefit of vitamin C supplementation to the horse for bone growth, reproductive efficiency, hemorrhaging, or improved athletic performance. Where vitamin C would appear to have the most benefit is in the stressed animal, yet there has been very little research done in the horse on this aspect.

Vitamin C (ascorbic acid) is synthesized in the horse from glucose in the liver. This endogenous synthesis is sufficient to meet the requirement of the animal under normal circumstances. If the animal is producing enough to meet its requirement, any oral supplementation is poorly absorbed. However, if the animal is suffering from an infection or is stressed, then not only does the requirement for vitamin C appear to increase, but also the ability of the horse to absorb vitamin C improves. It has been suggested that in older animals their ability to synthesize vitamin C can be compromised for a variety of different reasons, including stress factors such as heat, cold, parasites, noise, infection, overcrowding, inadequate ventilation and transport. So, theoretically, vitamin C should be useful to the horse at specific times or in certain animals.

The typical equine diet contains very little vitamin C. A small amount of vitamin C is available in green forages, but grains contain practically no vitamin C. Synthetic vitamin C is very unstable in the presence of alkalis, metals (such as copper), heat and moisture. Although the gel-coated form of vitamin C is much less susceptible to oxidation, it will also deteriorate in mixed feeds over time. Further, synthetic vitamin C is very expensive, and

the amount of vitamin C needed to have an effect on blood levels would be at least 4.5 g per day. Therefore, it is questionable as to whether it is worth an increase in the price of feed for something that may only help a small percentage of the population. The bottom line is that vitamin C is better supplied in a supplement rather than in a commercial feed. Adding small amounts to a feed and then advertising it as having added vitamin C may help in the public perception but is doing nothing for the horse.

I am so confused. What do I need to look for in a hoof supplement? Should I give it to all of my horses?

I realize there is much confusion about the effectiveness of hoof supplements. Every person you talk to you gives a different answer because for some horses hoof supplements work and for others they do not. What has been shown in research is that if a horse already has good hooves, using hoof supplements will not improve hoof quality. Therefore, feeding a hoof supplement to a horse with good hooves is a waste of money. Research has shown that horses who do not have good hooves will often respond to therapeutic levels of certain nutrients.

There are many nutrients that affect hoof quality: proteins and specific amino acids such as methionine; minerals such as calcium, iron, sulfur, iodine, zinc, and selenium; and vitamins such as biotin, vitamin A, and vitamin E. At this time it is probably not important to go into detail about each of the nutrients; it should suffice to say they all have an important role in overall nutrition of the hoof. Certain nutrients have been the focus of research as possible supplements to improve hoof quality. For example, a study with Lippizaners showed an improvement in hoof quality in horses with poor hooves when fed 20 mg of d-biotin per day. Another study performed in Germany which found that supplemental zinc was beneficial to horses with poor hoof quality.

The specific nutrients to look for in a quality hoof supplement would be biotin (at least 15 mg per serving), zinc, methionine (or zinc methionine complex) and iodine. Some horses respond to

supplementation of one nutrient while others respond to another nutrient, so a good combination would be the best for a general hoof supplement. Horses on high fat diets also tend to show an improvement in hoof flexibility, so a supplement that has additional fat may be beneficial. Some hoof supplements have a multitude of additives other than those that research has shown to help hoof health. Care should be taken with these if used in combination with other vitamin, mineral, or protein supplements so that the animal is not receiving excessive amounts of any of the nutrients.

Some things to remember when feeding hoof supplements include: 1) supplement only horses showing poor hoof quality, 2) some but not all horses will respond to supplementation, 3) it takes around nine months to see results on hoof quality because supplementation affects only the new growth, and 4) supplementation is most important if a horse does not have access to green, growing grass (during the winter).

My mare had her foal on March 30. Fortunately, it was a very uneventful delivery! I'm currently weaning the foal at a friend's farm. My friend owns a foal the same age as mine. She is very adamant about feeding 10% protein feed because of the threat of OCD, something that has happened in at least three of her foals. The foals are getting timothy hay. They are out in the evenings; however, grass is minimal since we have had little rain. Is my foal receiving adequate nutrition?

A One nutrient vital for growth is protein. If green pastures are available, the protein content can be as high as 26% in the lush growth during spring, but during a drought it is closer to 10% if there is any grass in the pasture. If I know that a growing foal is on pasture most of the time, I normally do not worry much about the protein in the grain. However, if the horse is getting timothy hay (~ 6% protein), burnt grass and only a 10% grain mix, then I might worry that the foal is not getting enough protein for normal growth. Additionally, if the protein is limited now by forage and grain, and rainfall increases in the autumn enhancing pasture availability, there may be some compensatory

growth that may spur incidences of DOD.

Another problem with feeding a 10% mix is that it is likely not designed for a young growing horse. Such feeds are not meant to be fed in larger quantities than young horses can eat and there is not enough protein to support normal growth if there is not enough protein in the forage. Most importantly, the vitamin and mineral balance is not right. Most 10% feeds are designed for performance horses as they have lower requirements for all vitamins and minerals because they are not building new bone and tissues as are young horses. ☹️

Have a Question You Would Like To Ask?

The staff of Kentucky Equine Research welcomes questions and will be happy to answer any you may wish to ask. Simply:

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