



A Low Carb Diet/Brittle Frogs

Q: I have heard a lot about putting horses on low carbohydrate diets. What is a low carbohydrate diet for a horse and is it better for them?

A: Horses have been benefiting from low carbohydrate diets for thousands of years. Wild horses consume forage, such as grasses, which is very low in sugar content. The horse's digestive system uses bacteria to break down the plant cell wall and, as a by-product to fermentation, produce volatile fatty acids. The horse relies on these fatty acids to produce glucose, which is essential sugar for energy and fuel for muscles and body functions. Volatile fatty acids are produced in very consistent low levels and do not cause large fluctuations in blood sugar.

Horses that eat a diet high in grains that are quickly converted to simple sugars can have a spike in blood glucose that increases the production of insulin. Insulin is a hormone that sends glucose to the muscles and liver and affects other hormones and neurotransmitters. Some horses become nervous or "hot" on large amounts of grain and seem sensitive to high levels of glucose. Studies have shown that high carbohydrate diets make some horses more prone to developing laminitis and a muscle syndrome known as tying up. One study found that young horses with a high glycemic index (the extent of increase in blood sugar and the production of insulin after consuming a ration) had an increased incidence of bone and joint abnormalities that required surgical correction.

Some horses such as young growing foals, nervous animals, individuals with Cushing's disease and those prone to tying up or laminitis should be managed on low carbohydrate diets. Others, especially working horses that need a high-energy food source, excel on good quality pasture and/or hay and moderate grain rations.

If your horse has high athletic feed requirements or needs more calories, consider an alternative energy source before you double his grain. Alternative energy sources such as high fat/fiber pelleted and extruded feeds and processed rice bran (20 percent fat) provide energy with minimal impact on blood sugar levels and insulin production. Even the addition of oil, such as corn oil, to a grain ration will dampen its effect on blood glucose by delaying gastric emptying and providing a prolonged lower level of uptake of sugar.

Q: My middle-aged Half-Arabian mare wore shoes and pads for many years. Since we removed them for retirement, we noticed that her frog is brittle and almost non-existent. What should we do?

A: You have already taken the most important step toward reversing your mare's problem by removing the pads. Long hoof length and shoes lift the frog off the ground and when combined with pads prevents the natural abrasion that wears away and debrides the excess outer dead layers of frog tissue. Beneath the pad, the devitalized frog exists in a high moisture environment with bacteria and fungal elements that further damage the frog. Over the years the frog can diminish in size and consistency, becoming brittle and flaky instead of rubbery and shock absorbing. Fortunately these effects can be minimized with

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frequent quality farrier care and a variety of excellent packing materials, some of which are impregnated with antibiotics to improve the environment of the frog and sole.

Good hoof care and management should improve the appearance and function of your mare's frogs and hooves. Have her trimmed and evaluated by an experienced farrier on a regular basis. Clean her feet and frog lateral grooves and sulci with a hoof pick at least one time per day. Avoid footing that is muddy, manure or urine laden. If a foul odor or black sticky substance is present in her frog, she may require treatment for thrush, a bacterial infection that results from chronic exposure to moist, dirty conditions. Thrush can erode healthy tissue and lead to deep fissures and tissue loss. Treatment consists of good hoof hygiene, trimming away affected tissue and applying astringents to dry the tissues, thereby killing the bacteria. In severe cases thrush can cause lameness and should be treated with antibiotics.

Good biotin and methionine supplements and a quality vitamin mineral supplement can improve the quality and growth of hoof tissues. Finally, remember that exercise is crucial for healthy hooves in horses. Walking stimulates blood circulation and promotes hoof growth, so don't let her become sedentary. Give her access to safe pasture and/or ride her for pleasure every day. You should see improvement in the volume and consistency of her frog over time but due to atrophy of the blood supply, she may always have a smaller frog than other horses.

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