



FEED FOR THOUGHT

NONSTRUCTURAL CARBOHYDRATES AND THE METABOLIC HORSE

By Suzie Middlebrook | B.Sc., Cavalor Nutrition Specialist

Unfortunately, many horses are currently afflicted by different types of metabolic ailments, such as insulin resistance (IR) and laminitis. These types of ailments are often caused by a lack of exercise, overfeeding, genetics, some types of drugs, or a combination thereof. Horses that are IR or prone to laminitis are unable to cope with high amounts of nonstructural carbohydrates in their diet. Nonstructural carbohydrates (NSCs) are the percentage of a feedstuff that is made up of starches and water soluble carbohydrates, or sugars. NSCs are found in cereal grains and some types of hay, such as timothy grass or orchard grass.

While looking for a feed low in NSCs is a good place to start for some metabolic horses, not all low-NSC feeds are appropriate for all metabolic afflictions. Laminitic horses are more sensitive high levels of starch in their feed and should only 8-16% of their diet by weight should be from starches (Potter et. al, 1992). This is because these excess starches may overwhelm the horse's capabilities to digest them fully before they reach the large intestine which is largely populated by fiber-digesting microbes. These microbes enthusiastically consume their starchy treat and end up overwhelming their environment with the resulting wastes they produce. These wastes trigger a series of events that eventually lead to acute laminitis. That being said, an otherwise healthy, laminitic-prone horse can cope with a moderate level of sugar in their diet, around 4-6%. Some examples of feeds safe for horses susceptible to laminitis are Cavalor® Fiberforce or Cavalor® Strucomix Original.

On the other hand, insulin resistant horses cannot cope with even moderate levels of sugar. The sugars found in a feed are rapidly

absorbed by the horse and can cause an uncontrolled spike in blood sugar in the IR horse. This is because the horse is not able to respond normally to insulin. Insulin is the hormone that helps distribute the sugar from the blood to the areas of the body that need it, such as working muscles or the liver. Without the effect of insulin, the horse's blood sugar levels will become too high. If left untreated, insulin resistance in horses can lead to abnormal fat distribution, muscle loss, fatigue, and kidney stress. While low-to-moderate starch levels (between 10-18%) are generally fine for otherwise healthy IR horses, it is imperative that these horses are fed very low levels of sugar (<4%). While the same two choices are within these guidelines for IR horses as laminitic horses, Cavalor® Fiberforce is the best choice for IR horses based on due to its minimal effect on blood glucose levels.

When choosing a low NSC feed for your special needs horse, it is imperative to look at the break down into sugars and starches as well. As an example, a popular brand on the market advertises a low NSC level of around 12%. While the feed was only around 6% starch, it was also around 6% sugar. The high sugar level means that this feed would not be suitable for a horse with insulin resistance. That being said, it would be a suitable choice for a horse prone to laminitis. This instance illustrates why it is important to look beyond just total NSC levels when choosing a feed for your special needs horse.

Potter, GD, FF Arnold, DD Householder, DH Hansen, and KM Brown. 1992. Digestion of starch in the small or large intestine of the equine. *Pferdeheilkunde, Sonderheft*, 107-111.