

## Not all carbs are created equal

This is NOT about calories, or the amount of Digestible Energy. We need to focus on the FORM of those calories - on each individual carb fraction. Sugar causes glucose and insulin surges that may trigger a cascade of effects in animals with abnormal glucose metabolism. Too much starch may spill into the hind gut, causing a bloom of lactic acid producing bacteria. Fructan is getting a lot of attention these days, because it too, can cause disruption of bacterial population dynamics in the equine cecum. [For more information on fructan.....](#)

Even if a greater amount of DE and similar amount of total carbohydrate is fed to ponies in the form of alfalfa, blood glucose levels will be 30% higher from a meal of oats comprising less DE. Plasma insulin increased with glucose entry rate. (Argenzio, 1972) ] Some forms of carb are safer than others. It's the sugar, starch and fructan that we need to limit. Even if your horse is not an easy keeper, you can STILL fatten a horse without having to resort to a high sugar and starch (grain and Supergrass) diet by choosing feeds higher in safer forms of carbohydrates like pectin and hemicellulose that ferment more slowly and do not cause a glucose/insulin surge.

Fiber, in the form of hemicellulose is a safe form of carbohydrate that is slowly fermented and does not cause a glycemic response. End products of fiber fermentation are volatile fatty acids like acetate, butyrate and propionate that produce energy by a different pathway, bypassing the glycemic response that produces the insulin surge common to horses with Equine Metabolic Syndrome.

Pectin is another type of carbohydrate found in the NFC fraction, but is not part of NSC. [Learn more about the difference between NFC and NSC here.](#) It has been found to be a safe source of calories for laminitic horses. Pectin is very low in grass, but is found in alfalfa at levels of 10 -15% of dry matter. Pectin can be very high in feeds like unmolassed beet pulp and soy hulls, and for that reason these ingredients are often main components of feeds designed for laminitic horses. If a horse is intolerant of sugar or starch, but cannot maintain enough weight on hay alone, feeds containing beet pulp, soy hulls, and/or mature alfalfa are often beneficial as a safe alternative to grain or grain products.

When you take the sugar out, you may find you can feed more actual pounds of feed that are higher in fiber and pectin. This gives horses more chew time. Although it seems counterintuitive, you may also find that your EMS horse can still lose weight, even eating more low sugar hay than when you fed high sugar hay. Horses with severe insulin resistance can be too skinny, as they are starving on the cellular level. These horses can gain needed weight by feeding fermentable fiber such as hemicellulose and pectin. By-passing the impaired glucose metabolism makes all the difference.

Argenzio, Hintz, Effect of Diet on Glucose Entry and Oxidation Rates in Ponies, 1972 J. Nutrition, 102: 879-892

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