

When excess carbs create problems in Horses

By Kathryn Watts

Brood mares, growing horses and athletes in training may benefit from the high carbohydrate, improved forages being developed today. But what is good for one type of horse may be too much for another. Many of our horses, ponies and donkeys are pets, pasture ornaments, or only get ridden lightly on weekends. Managing a laminitic or obese equine often requires grazing muzzles, stalls, dry lots, and isolation from the rest of the herd at pasture. If only very nutrient dense forage is available, the 'easy keepers' are often forced to live on less roughage than is necessary for optimum health gut, and they don't have enough chew time. Inadequate roughage is linked to many equine vices such as cribbing, weaving, wood or manure eating. It's also a cause of ulcers. We need 'hay lite', with all the minerals and protein, but less sugar. The concept of a 'health spa paddock', where overweight, laminitic horses can go out safely, socialize, exercise and nibble all day on low calorie grass needs to be considered. This is not beyond the skills of plant breeders; we just need to let our needs be known, and generate the funding for the research.

There is a condition in horses called Equine Polysaccharide Storage Myopathy (EPSM or PSSM). This is another form of carbohydrate intolerance that triggers 'tying-up' due to genetic defect causing abnormal glycogen metabolism. This is being treated successfully by limiting the intake of sugar and starch, and replacing extra needed calories with fat. To learn more about EPSM go to:

<http://www.addl.purdue.edu/newsletters/2000/winter/pesm.shtml> and [Valentine full text link](#).

Fat, fast growing babies are at higher risk for several forms of Developmental Orthopedic Disease (DOD). Phytitis has long been associated with overfeeding in growing horses. (Glade and Reimers) showed that the spike in insulin following a meal high in easily digestible carbohydrates (corn-hay pellets) was associated with decreased T4 secretion and accelerated T4 conversion to T3. The alterations in T4 metabolism are implicated in the production of developmentally immature cartilage resulting in joint disease in overfed growing animals. The impaired thyroid function in relation to high grain feeding is something that should be investigated further. High insulin levels are also implicated in OCD ([Jeffcott and Henson](#)).

A good overview of carbohydrate metabolism in horses is found here:

<http://www.ivis.org/advances/Ralston/hoffman/IVIS.pdf>

Intolerance to sugar may develop in aging horses, just as it does in humans. A study of geriatric horses (Ralston, 1988) found over 70% over the age of 20 had signs of altered glucose metabolism. In this day of improved health care, and with many horses considered members of the family, the number of geriatric horses is growing. Problems with bad teeth or impaired absorption of nutrients used to be common in geriatric horses, but with frequent worming and dental care all their lives, many older horses today do not need feeds that are easier to chew and digest. Is the current fad of feeding equine 'senior' feeds backfiring on us? There is far too much anecdotal evidence linking the introduction of senior feeds high in sugar and starch to laminitis. The new research showing that high insulin can cause laminitis now explains this ([Asplin, Sillence, 2007 et al](#)). If feed manufacturers refuse to divulge the content of sugar and starch to inquiring consumers, it may indicate that it may be a sensitive subject. Call or email your feed company today and ask them to participate in the [Certicarb Feed Testing Program](#) so you can compare with other products fairly.

How many people are incorrectly assuming their horse has training or temperament issues because of too much grain, or too much sugar in the grass or hay? I have an email I saved titled 'Pycho timothy?' in which someone noted that every horse in a large boarding stable went bonkers when a new load of hay came in, and calmed back down with the next load. There are finally some scientific studies being done to verify that excess carbohydrates causes excitability in horses, ([Nicol, Badnell-Wate, et al](#)).

Surprisingly, some the best information I've found regarding approaches to minimizing risk for laminitis is from the dairy industry. Laminitis has become a serious problem in confined dairy herds. While cows do not usually get acute laminitis, the presence of a large percentage of sub-clinical or mild laminitis is recognized as a factor limiting milk production <http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/90514.htm> Water beds for cows are selling like hotcakes! The dairy nutritionists have found that they were pushing a bit too hard for production. They acknowledge that the amount of sugar and starch in the ration that maximizes milk production is causing too much laminitis.

Many people assume that these conditions are only linked to grain rations, not forage. I have grass hay analysis with levels varying from 5 to over 35% dm Non Structural Carbs, which seems to me to be a wide enough variation to make a big difference, even when not feeding any grain. Under certain environmental conditions, NSC in grass can change very quickly, in the matter of a couple of weeks. A horse that is continually grazing during

such a change in conditions is being forced to deal with a very rapid change in dietary components, even while eating the same pasture.

Hopefully some of this new research will instigate re-evaluation of how we feed our horses today.

Asplin, K.E., M.N., Silience, C.C. Pollitt, and C.M. McGowan. (2007) Induction of laminitis by prolonged hyperinsulinaemia in clinically normal ponies. *The Vet. J.* 174: 530-535

Glade, Reimers, (1985) Effects of dietary energy supply on serum thyroxin, tri-iodothyronine and insulin concentration in young horses, *J. Endocr.* 104, p. 93-98

Jeffcott L.B. and F.M.D. Henson (1998) Studies on growth cartilage in the horse and their application to aetiopathogenesis of dyschondroplasia (osteocondrosis) *The Veterinary Journal* (156):177-192

Nicol, C.J., A.J. Badnell-Water, R. Bice, A. Kelland, A.D. Wilson and P.A. Harris (2005) The effects of diet and weaning method on the behaviour of young horses *Applied Animal Behaviour Science* (95):205-221

Ralston, Nockels. (1988) Differences in diagnostic test results and hematologic data between ages and young horses. *Am J Vet Res Aug:* 49(8): 1387-92