



High Fiber, Low-Carb for PSSM Regular Exercise is the Other Part of the Trick

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PSSM, polysaccharide storage myopathy, also known as EPSM (equine polysaccharide storage myopathy), is an inherited muscle disorder that causes tying-up in primarily Quarter Horses, drafts and warmbloods. Previously, compared to normal Quarter Horses, those with PSSM were found to take up twice as much glucose into their cells when insulin is infused. It was felt this might be the reason PSSM horses accumulate so much glycogen and abnormal polysaccharide in their muscles.

A study in the American Journal of Veterinary Research tested the insulin sensitivity of Belgian horses, both normal and with PSSM. They found there was no difference between normal and affected Belgians, but all Belgians had high sensitivity to insulin, similar to the Quarter Horses that have PSSM.

The study also compared muscle fiber types between the two breeds. There was no difference between normal and PSSM drafts. However, the drafts had more type 2a fibers than type 2b and in the Quarter Horse it is the other way around. Type 2a fibers (drafts) can contract quickly to generate high force the horse uses for pulling. This type of fiber is able to use oxygen better than the type 2b (Quarter Horse) fibers.

What this means to owners of PSSM horses is that high-insulin sensitivity is not the cause of PSSM, at least in Belgians. It's also possible that the high glucose uptake that PSSM Quarter Horses show is more related to their muscle cells being highly reliant on glucose as a result of whatever it is that causes PSSM. Either way, controlling symptoms involves limiting the amount of glycogen in the muscle cells, which means a high-fiber, no-grain diet.

This study may also explain why drafts with PSSM respond to fat better and seem to need more of it. Fat can only be used for fuel in cells that are burning fuels in the presence of oxygen. The type 2a fibers can do that. Type 2b fibers, which predominate in the Quarter Horses, have a much lower capacity to burn fuel with oxygen so rely heavily on glycogen, which can be burned with or without oxygen.

Bottom Line

All breeds of horse with PSSM benefit from regular exercise to improve their capacity to burn fuels with oxygen and a high-fiber, grain-restricted or grain-free diet.

Supplemental fat is likely to be of more benefit to drafts than Quarter Horses because of their higher percentage of muscle fiber types that can efficiently burn fat.



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