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## **Blood glucose response to fructose levels of common Missouri grasses in ponies**

Laminitis in horses is a serious disease which causes pathological changes in hoof anatomy, leading to long lasting, crippling effects. Grass founder resulting from grazing lush spring grass or stressed forage is the most common cause of equine laminitis. Increased hindgut fermentation of excess soluble sugars and starches found in these forages causes the production of large amounts of lactic acid. The lactic acid kills hindgut bacteria, which release toxins as they degrade. These toxins enter the blood and travel to the hoof, where they begin to breakdown the laminae layers. The objective of this study was to determine the fructose concentration of common Missouri grasses and the subsequent response in the blood glucose levels of ponies consuming these. Tall fescue, orchard grass, bermuda, timothy and smooth bromegrass samples were collected in May and June from pure plots at the Ledoux Experiment Station in Clinton, MO. These grass samples, along with a sweet feed mixture were analyzed for crude protein (CP), neutral detergent fiber (NDF), acid detergent fiber (ADF), lignin, and total fructose. Tall fescue and bermuda, which had the highest and lowest fructose levels when analyzed, were fed to six ponies (average body weights = 258.5 + 38.2 kg) in a 2 x 3 replicated Latin square design. The ponies were fed at 2% BW over two 3 day feeding periods. Feedings were at 7 a.m. and 7 p.m. with blood samples collected at 0, 45, 90, 120 and 150 minutes after feeding. Blood samples were centrifuged, and the resulting blood plasma was assayed for total glucose levels. This knowledge of fructose levels and associated blood glucose responses provides equine owners with knowledge of the potential of Missouri grasses to cause laminitis.