BUCKEYE™ NUTRITION

NSC THRESHOLD DEFINED FOR FEEDING SEVERELY INSULIN DYSREGULATED HORSES

Feeding horses with equine metabolic syndrome and/or insulin dysregulation is a difficult task. Choosing the correct diet to minimize insulin response is difficult.

Most recommendations for insulin dysregulated horses include a diet low in NSCs (Non-Structural Carbohydrates = starch + water-soluble carbohydrates). Many horse feeds have made claims of fitting the "low" NSC moniker without defining a low NSC threshold. Without a true definition of a "low" NSC feed, a horse could consume an amount of NSCs that could excessively increase insulin levels, thereby increasing the risk for negative consequences.

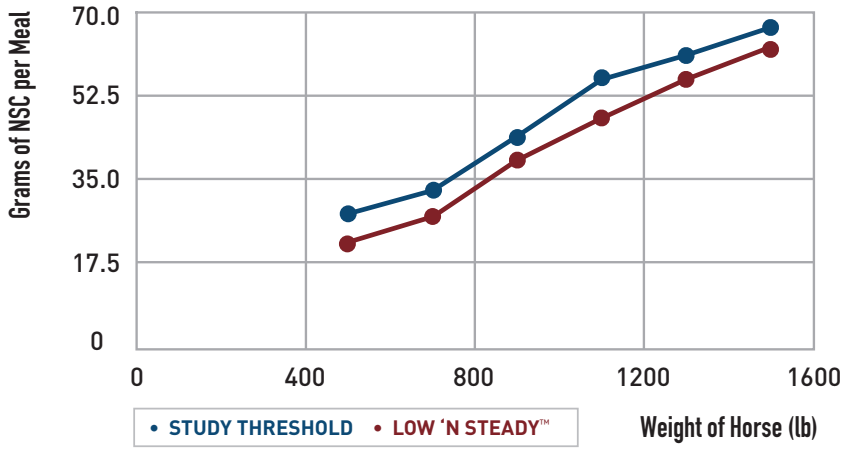
Recent research from the University of Kentucky, Waltham Petcare Science Institute, and Mars Horsecare/BUCKEYE™ Nutrition has indicated the NSC threshold for severely Insulin Dysregulated horses as 0.1g NSC/kg of body weight/meal (50g of NSC for an 1100 lb. horse). A meal that included NSC above this threshold would be more likely to increase insulin levels significantly.

In response to this groundbreaking finding, BUCKEYE Nutrition has produced the first ration balancer on the market to meet the horses' nutritional requirements while reducing the NSC below the recommended threshold.

HORSES: 14 mature horses

METHODS: Horses were fed increasing levels of NSC to provide a threshold for starch and sugar to elicit an augmented insulin response.

CONCLUSIONS: Insulin dysregulated horses seem to have an apparent threshold for NSC around 0.1g/kg of body weight/meal, above which significantly increased insulin responses are seen compared with non-insulin dysregulated horses.



How many grams of NSC per meal are you feeding?		X	454 g/lb	X		=	
	lb per meal				feed NSC%		g of NSC/meal
Example: LOW 'N STEADY	1.25 lb	X	454 g/lb	X	8.5%	=	48g
	lb per meal				feed NSC%		g of NSC/meal

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Identifying possible thresholds for nonstructural carbohydrates in the insulin dysregulated horse

Macon EL, Harris P, Bailey S, Caldwell Barker A, Adams A

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BACKGROUND

Identifying intake levels of nonstructural carbohydrates (NSCs) that limit the postprandial insulinaemic response in the insulin dysregulated (ID) horse may help reduce hyperinsulinaemia-associated laminitis (HAL) risk.

OBJECTIVE

To determine if ID horses have thresholds for pure sources of starch and sugar, above which there is an **augmented insulin response**.

METHODS

Fourteen adult horses (6 ID and 8 noninsulin dysregulated, NID; matched for bodyweight) were randomly fed eight dietary treatments. Dietary treatments were formulated using a base of low-nonstructural carbohydrate pellet (LNSC; 0.04 g of water-soluble carbohydrates (WSCs)/kg bwt and 0.01 g of starch/kg bwt), to which pure sugar (dextrose) or starch (50:50 mix of waxy-maize and oat starch powder) sources were titrated to create diets with increasing amounts of either WSC (0.06–0.17 g WSC/kg bwt), or starch (0.03–0.1 g starch/kg bwt). Horses were fed each dietary treatment at a rate of 1 g/kg bwt once over 12 weeks. Serial blood samples were collected pre- and up to 240 min postprandially. Insulin was determined via RIA and diet analytes were determined via wet chemistry. Statistical analysis was performed with a mixed effect model. Positive incremental area under the curve for insulin (IAUCi) was calculated for all horses and dietary treatments.

RESULTS

There was no significant effect of diet in NID horses but diets with NSC >0.1 g/kg bwt produced an augmented response in ID horses compared with the LNSC ($p < 0.05$). ID horses IAUCi were also significantly different to all NID IAUCi for diets with NSC >0.1 g/kg ($p < 0.04$). Apparent thresholds for sugar and starch addition varied.

CONCLUSIONS

Based on this study, using supplemental pure starch and sugar sources, ID horses seem to have an apparent threshold for NSC of around 0.1 g/kg bwt/meal, above which significantly increased insulin responses are seen compared with NID horses.