

THE EFFECT OF FEEDING A SINGLE STARCH SOURCE, (OATS) OR A HIGH AND A LOW STARCH COMPOUND TO PROVIDE 2G STARCH/KGM ON THE GLYCAEMIC AND INSULINAEMIC RESPONSE OF HORSES

Vervuert I^{1,2*}, Voigt K², Hollands T³, Cuddeford D⁴ and Coenen M^{1,2}

Reasons for study:

Various studies have shown that feeding a single starch source to horses is affected by adding fibre. Most compound feeds formulated correctly for performance horses should contain some fibre. The fibre in compound feeds is ground and processed. If a compound feed is fed to provide the same amount of starch as from a single starch supply, does the horse digest it in the same way?



Aims:

Oat starch is known to have a high precaecal digestibility. Cooking starch increases its precaecal digestibility but feeding it together with chopped fibre reduces digestibility. The aim of this study was to compare the effects of feeding mixed commercial diets containing cooked starch and fibre or oats on the glycaemic and insulinaemic response of horses. Breath hydrogen was measured as an aid to detecting microbial fermentation of starch.



Methods:

Four horses were fed either oats (O control, precaecal starch digestibility > 90 %) or two different commercial feedstuffs, (Pasture Mix starch 254g/kg, crude fibre 140g/kg; Microfeed starch 300g/kg, crude fibre 65g/kg; as fed) in a changeover design in order to provide 2g starch/ kgM/meal. A blood and breath collection day was conducted at the end of each 13 day stabilisation period.

Results:

Cooking starch appeared to improve its small intestinal digestion as reflected in the glycaemic and insulinaemic response (treatment $p < 0.05$, time $p < 0.05$), regardless of fibre content when compared to oats. Breath hydrogen increased within 180 minutes after intake of all diets, but with a more pronounced increase for oats (time $p < 0.05$, treatment $p < 0.05$).

Conclusion and practical significance:

Oat starch was less well digested compared to starch contained in compound feeds and it also appeared to be fermented more by the microflora. Starch fermentation can cause gastrointestinal disturbances and thermal processing appears to reduce this risk. Ground fibre does not appear to reduce starch digestion as measured by the glycaemic response.

¹Institute of Animal Nutrition, Nutrition Diseases and Dietetics, Faculty of Veterinary Medicine, University of Leipzig, Gustav-Kühn-Str. 8, D-04159 Leipzig

²Institute of Animal Nutrition and Dietetics, University of Veterinary Medicine, Bischofsholer Damm 15, D-30173 Hannover

³Dodson and Horrell Ltd, Kettering Road, Islip, Kettering, Northamptonshire, NN14 3JW, UK

⁴Division of Veterinary Clinical Sciences, University of Edinburgh, Easter Bush Veterinary Centre, Roslin, Midlothian, EH25 9RG, UK

