

# Effects of short-chain fructo-oligosaccharides on biochemical disturbances occurring in the hindgut of horses following an abrupt diet change

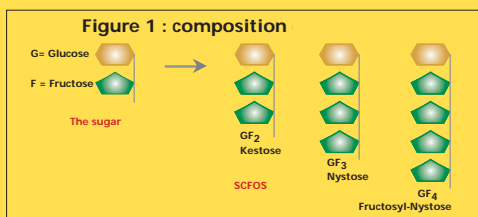
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## INTRODUCTION

Fructo-oligosaccharides (scFOS) are prebiotic ingredients that stimulate selectively the growth and activity of one or a limited number of bacterial species already present in the gastro-intestinal tract (Gibson et al., 2004). It was already shown in piglets that they can enhance diversity and stability of the digestive flora (Konstantinov et al., 2003). As the hindgut and especially the colon of horses are sensitive to microbial disturbances that can induce digestive troubles, scFOS could be of great interest in this species. The objective of the study was to assess effect of a dietary supplementation with scFOS on the decrease of biochemical disturbances occurring in the hindgut of horses following an abrupt diet change.



## MATERIAL & METHODS

Four 7-year old cross bred, fistulated geldings (425 ± 27kg) were included in a 2-treatment-2-period cross-over designed study. Each period lasted 22 days, when horses were fed either the control diet, straw and concentrate pelleted feed (Hippo 122, UAR, Villemoisson, France) or the control diet supplemented with 30g of scFOS (Profeed®, Beghin-Meiji, France) top-dressed on the morning meal of concentrate feed. After 21 days, in order to induce a digestive stress, a meal of barley (2.25kg equivalent to 0.28%BW of starch) was given to horses instead of their usual morning meal. Caecal and colonic contents were sampled before, 5h and 29h after the meal of barley. Immediately after collection, pH was measured and about 10mL of each digesta sample were filtered (100µm) for later determination of D- and L-lactate, volatile fatty acids (VFA). Another sample was taken from the colon in order to analyse total anaerobes, Streptococci, Lactobacilli and lactate users through classic cultural methods. An analysis of variance with the GLM procedure of SAS was carried out to assess the variables' response to the diet and the factor of stress.

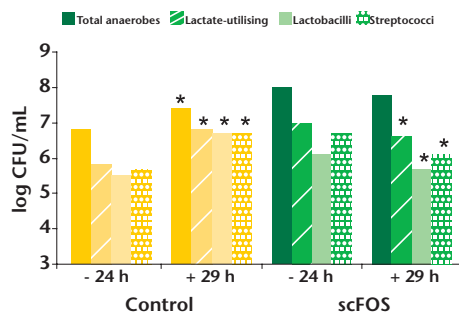
## RESULTS

Contrary to the control group, there was:

- No sharp increase of the bacteria involved in lactate metabolism
- Trends for higher VFA concentrations in the caecum
- D-lactate did not accumulate in the colon

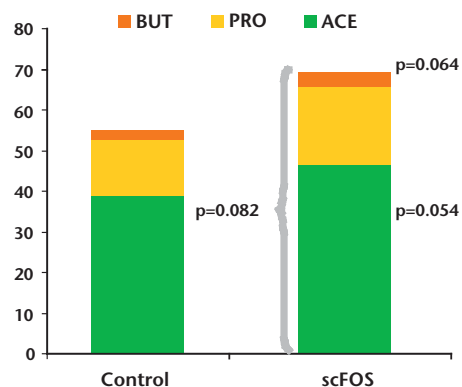
Dietary scFOS supplementation allows to prevent from microbial disturbances after the meal of barley.

*scFOS prevent large growth of bacteria involved in lactate metabolism*

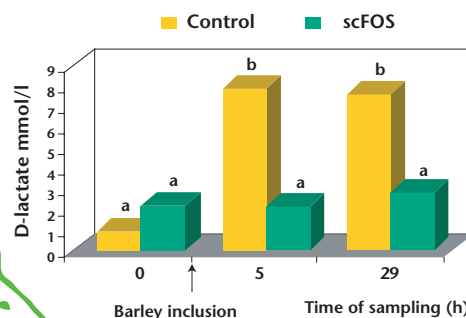


\*: Within a diet, +29h value is different from value at -24h (p<0.05)

*scFOS tended to increase VFA concentrations in the caecum 29 hours after the meal of barley*



*ScFOS avoid accumulation of D-lactate in the colon of horses*



a,b: Bars with different superscript are different (p<0.05)

## CONCLUSION

It appears from our results that long term scFOS feeding (21 d) at 30g/day/horse can avoid D-lactate accumulation in the colon in case of dietary starch excess and help to reduce the incidence of digestive troubles.

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