

In Vitro Gas Production from Batch Cultures of Stomach and Hindgut Digesta of Horses Adapted to a Prebiotic Dose of Fructooligosaccharides and Inulin

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- Parts of fructooligosaccharides (FOS) and inulin were fermented in the stomach.
 - Gas production was accelerated in gastric contents of horses adapted to FOS and inulin.
- Effects of almost prebiotic doses of FOS and inulin on hindgut fermentation seemed to be low.

Abstract

Fructooligosaccharides (FOS) and inulin may modulate hindgut fermentation. It was tested if digesta batch cultures taken from horses adapted to FOS and inulin show different fermentation compared with such taken from nonsupplemented horses. Six horses received 0.15 g FOS and inulin/kg body weight/d via Jerusalem artichoke meal (JAM) upon a hay-based diet; six horses received corncob meal without grains (CMG) as placebo. The horses were euthanized after 20 days. Digesta samples were taken from stomach, cecum, ventral colon ascendens (VCA), and colon transversum (CT). Digesta batch cultures were incubated 48 hours to measure in vitro gas production as well as pre- and post-incubation pH and oxidation-reduction potential (ORP). A distinct fermentation of the surplus of fructans present in the inoculum was found with JAM-adapted batch cultures. Gas production was accelerated in inoculated gastric contents of horses adapted to JAM compared with CMG adapted ones (7.8 vs. 16.4 hours to achieve half of the 48 hours gas quantity, respectively; $P > .05$). Although buffered, pH decreased during fermentation. Postincubation pH was lower with JAM than CMG-adapted batch cultures ($P > .05$). Preinoculation ORP was lower with stomach batch cultures adapted to CMG than with such adapted to JAM. The ORP increased twofold from pre- to post-incubation with the latter. Asymptotic maximal gas production decreased gradually using cecum, VCA, or CT digesta. Parts of FOS and inulin of digesta are fermented in the stomach, which reduce possible effects on hindgut fermentation. **Elevated fermentation may considerably impact stomach health.**