Effects of feeding prebiotics to pigs for 1 or 2 weeks before slaughter

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Prebiotics are non-digestible oligosaccharides acting by stimulating the growth of bacteria being beneficial for the gastrointestinal health of the host and may serve as a means to control pathogens. This study aimed to assess if inclusion of chicory or lupins (prebiotics) in the diet of pre-slaughter pigs for just 1 or 2 weeks could change the composition of their intestinal microbiota and help to lower the level of the important foodborne pathogen *Campylobacter* spp.
A total of 48 pigs of initial 90 kg live weight were fed with either a lupin (25% blue lupin seed), chicory (10% chicory) or control (100% organic concentrate) diet for 1 week (24 pigs) or 2 weeks (24 pigs) before slaughter. DNA extracted from the luminal content of distal ileum and caecum collected at slaughter, was used for terminal restriction fragment length polymorphism (T-RFLP) analysis of the composition of intestinal microbiota and for measuring the amount of *Bifidobacterium* spp. by quantitative real-time PCR (qPCR) analysis. The *Campylobacter* spp. excretion level was determined by direct plating of ten-fold dilution series of faeces (1 g) on mCCDA agar plates.
All the pigs excreted *Campylobacter* spp., but the excretion was reduced 10 fold in pigs fed lupins for 1 week as compared to control and chicory fed pigs (mean Log_{10} 2.9 vs. 4.1 CFU/g) ($P<0.05$). The qPCR analysis showed that feeding with lupins for one week stimulated the growth of bifidobacteria in caecum as compared to the other diets ($P<0.05$), while the level of bifidobacteria in ileum was independent of feed treatment ($P>0.05$). T-RFLP, which is a semi-quantitative analysis with the teriminal restriction fragments (T-RFs), reflecting the abundance of the current bacteria group represented by that T-RF, showed that 4 of the most abundant bacteria with T-RF values >5% relative intensity of total abundance differed significantly between the feed treatments ($P<0.05$).
This study showed that even a short-term alternative feeding strategy with prebiotics in the diet of pre-slaughter pigs elicited changes in the composition of intestinal microbiota with stimulation of the growth of bifidobacteria in caecum and a reduction of the *Campylobacter* spp. excretion level.