Effects of feeding finisher pigs with chicory or lupine feed for one week or two weeks before slaughter with respect to levels of Bifidobacteria and Campylobacter - DTU Orbit

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This study aimed to assess whether inclusion of chicory or lupine (prebiotics) in the diet of pre-slaughter pigs for just 1 or 2 weeks could change the composition of their intestinal microbiota, stimulate the growth of bifidobacteria and help to lower the amount of thermophilic Campylobacter spp. (mainly Campylobacter jejuni and Campylobacter coli), which are a major cause of food-borne infections in humans. A total of 48 pigs that had an initial live weight of 90 kg were fed with either a lupine (organic concentrate with 25% blue lupine seeds), chicory (organic concentrate with 10% dried chicory roots) or control (100% organic concentrate) diet for 1 week (24 pigs) or 2 weeks (24 pigs) before slaughter. The Campylobacter spp. level in rectal faecal samples after 0, 1 and 2 weeks of feeding and in the luminal content from ileum, caecum and colon at slaughter was determined by direct plating on modified charcoal-cefoxperazone-deoxycholate agar plates. DNA extracted from the luminal content of distal ileum and caecum was used for terminal restriction fragment length polymorphism (T-RFLP) analysis of the composition of intestinal microbiota and for measuring the amount of bifidobacterial and total bacterial DNA by quantitative real-time PCR (qPCR). Campylobacter spp. were excreted by all pigs and present in the luminal content from distal ileum to midway colon with particularly high numbers in the caecum, but the excretion was reduced by 10-fold in pigs fed lupines for 1 week as compared with control- and chicory-fed pigs (mean log10 2.9 v. 4.1 CFU/g; P <0.05). The qPCR analysis showed that feeding with lupines resulted in higher levels of bifidobacteria in caecum as compared with the other diets (P <0.05). T-RFLP analysis showed that four of the most abundant bacteria with terminal restriction fragment values >5% relative to the intensity of total abundance differed between the feed treatments (P <0.05). Therefore, 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 the intestinal microbiota, where lupine increased the level of bifidobacteria in caecum and reduced the Campylobacter spp. excretion level after 1 week.

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