

Pectin infusion into the caecum reduces the utilization of threonine intake for body protein deposition and urea flux in growing pigs

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Background

In a previous study it was demonstrated that the inclusion of pectin in the diet of growing pigs reduces the efficiency of using apparent ileal digestible threonine intake for body protein deposition. Such an effect was not observed for lysine. The pectin effect on threonine utilization may be attributed to the loss of endogenous protein into lower gut or to microbial fermentation in the upper and lower gut.

Objective

To determine the effect of stimulating hindgut fermentation, by infusing pectin into the caecum, on threonine utilization and urea kinetics in the growing pig.

Results

Pectin infusion into the hindgut decreased whole body protein deposition, threonine utilization for protein deposition, urea pool size, and urea flux. Apparently pectin infusion into the hindgut of growing pigs increased threonine losses into the hindgut. Based on urea flux, urea degradation in the hindgut and ammonia N absorption from the hindgut appear reduced when infusing pectin into the hindgut. Urinary N excretion was not affected by pectin infusion, indicating that urea is not the main N source for increased microbial fermentation in the hindgut of pigs. Given the high threonine content in mucin protein and the contribution of mucin protein to endogenous gut protein secretions, the effects of stimulating endogenous protein secretions into the hindgut is likely to be smaller for essential amino acids other than threonine.

Take Home Message

Pectin infusion into the caecum appears to stimulate the secretion of endogenous protein, rather than urea, into the hindgut of pigs and increases the dietary threonine requirements. These effects are not considered when pig diets are formulated based on ileal amino acid digestibility values for feedstuffs.

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