

# Feed ingredients differing in fermentable fibre content affect nitrogen excretion and fermentation metabolites in weaned pigs

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Inclusion of isolated fibre sources in the diet shifts nitrogen (N) excretion from urine to feces in pigs and modulates the gut microflora. As a consequence, ammonia emission decreases and gut health is improved. However, many experiments were conducted with isolated dietary fibre and very little is known on the impact of fibre when the latter still forms the cell walls of feed ingredients used in swine nutrition.

An experiment was conducted with 64 weaned pigs (24 kg) to evaluate the effect of different fibre sources on N excretion and the fermentation metabolites produced in the gastrointestinal tract. The diets were balanced in energy and amino acids with soy protein isolate, pea starch, sucrose and a premix and supplemented with wheat bran, cellulose, peas, pea hulls, pea inner fibre, sugar beet pulp, flaxseed meal (FSM) or corn DDGS, as fibre sources. Fecal samples were collected for 3 consecutive days from d10 and pigs were slaughtered on d16. Digesta from ileum and colon were collected and analyzed for their short-chain fatty acids (SCFA) and ammonia content.

When wheat bran was the reference ingredient, the total tract N digestibility was lower with FSM and DDGS (72 and 74% respectively) and higher in pea hulls (81%) and pea inner fibre (79%). This, in turn affected the amount of faecal N excreted, the latter being higher with FSM and DDGS (280 and 262 g/kg N intake respectively). The pea- and pea hull-based diets had higher (P<0.05) SCFA (39 and 27mMol/kg digesta) at the ileum level, while no difference (P > 0.05) in SCFA concentration was observed among diets in the colon. Higher ammonia concentration was also found in the colon of pigs fed with peas, pea hulls, FSM and DDGS, which might adversely affect the pig's gut environment.

**Implications:** Diets equally balanced in digestible energy and N content can show very different levels of N excretion and fermentation parameters, depending on the composition of the DF. Thus, different sources of dietary fibre can be used to manipulate the gut environment and N excretion of pigs.