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Non-Digestible Carbohydrate Structure Modulates Resilience to ETEC F18: Towards Reduced Antimicrobial Reliance in Pig Production

Inhalt

Post-weaning diarrhoea (PWD), commonly caused by enterotoxigenic *Escherichia coli* (ETEC) F18, is a major health challenge in pig production and a driver of antimicrobial use. Given concerns over antimicrobial resistance and restrictions on zinc oxide, nutritional strategies to enhance gut resilience are important. We evaluated 4% arabinoxylan (AX), xylo-oligosaccharides (XOS), or chito-oligosaccharides (COS) in an ETEC F18 challenge model.

Eighty piglets were allocated to a non-challenged Control and four ETEC-challenged groups (Control-ETEC, AX-ETEC, XOS-ETEC, COS-ETEC).

COS-ETEC showed faecal consistency and dry matter profiles closest to Control. During acute infection, diarrhoea probability remained below ~50% in COS-ETEC versus ~50–100% in other challenged groups, although differences were limited by variation. COS did not reduce ETEC shedding, suggesting resilience rather than pathogen suppression. AX-ETEC resembled Control-ETEC in diarrhoeal outcomes and showed numerically the highest ETEC shedding. Haptoglobin was lowest in XOS-ETEC on days 2 and 4 post-challenge ($P < 0.05$), intermediate in AX-ETEC and COS-ETEC, and highest in Control and Control-ETEC. Daily gain was lowest in supplemented challenged groups ($P < 0.05$), highest in Control, and intermediate in Control-ETEC.

NDC structure differentially modulated ETEC F18 responses, supporting nutritional strategies to enhance resilience and potentially reduce antimicrobial reliance.

Keywords

Prebiotic, ETEC F18, post-weaning diarrhoea, non-digestible carbohydrates, gut health, antibiotic resistance

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Kommentare:

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