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REDUCTION OF ANTIBIOTICS BY THE CONTROL OF RESISTANT AND NON-RESISTANT GRAM-NEGATIVE BACTERIA.

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Introduction

In the pig husbandry, antibiotics are still used to prevent and control infections. Bacterial infections are often related to *E.coli* and *Salmonella* infections; within those groups, also many multi-resistant pathogens are present. To further reduce the use of antibiotics and lower the presence and development of more resistant bacteria several new feed ingredients from plant origin are studied.

Material & Methods

Over 20 feed ingredients were evaluated in an *in-vitro* assay on bacterial adhesion (first step in pathogenesis). Two compounds, a selectively hydrolyzed coprameal (MCM) and rye overgrown with mycelium of *Agaricus subrufescens* (ROM) were selected for further testing in *in vivo* pig experiments. Pigs were infected with either *E.coli* F4 or *Salmonella Typhimurium* (ST) and the effects on growth performance, microbiota composition, diarrhea, and immune markers were evaluated. Moreover, the bacterial shedding of ST and resistant *E.coli* populations were evaluated.

Results

Both MCM and ROM did show improved performance of piglets after weaning, especially during the period of infection in both *E.coli* and ST challenged situation. Bacterial shedding of ST was decreased with on average 1.5 log CFU/g. Cefotaxime resistant *E.coli* was reduced with 1.5 and 4 log CFU/gram in two different experiments when a combination of the feed ingredients was used. Further, feed ingredients showed a response on serum cytokine levels of IL-6 and IL-8.

Discussion & Conclusion

ROM and MCM showed improved performance and reduced shedding of (resistant) gram-negative pathogens, which would improve health of the pigs and reduce the need for antibiotics. More in-depth analysis of microbiota and immune system is needed to fully understand the mode of action.

Both ROM and MCM were effective in control of gram-negative bacteria and can be beneficial in raising pigs without antibiotics.