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COMBINING TWO PROBIOTIC STRAINS WITH OLIGOGALACTOSE ABOLISHES THEIR BENEFITS AGAINST F4+ETEC IN PIGLETS

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Background/Aims: This study evaluates the efficacy of combining two probiotic strains (*Bifidobacterium longum* subsp. *infantis* CECT7210 (Laboratorios Ordesa S.L.) and *Lactobacillus rhamnosus* HN001) with oligogalactose to improve their efficacy against enterotoxigenic *Escherichia coli* (ETEC) F4+.

Methods: A total of 96 piglets of 21 days were distributed into 32 pens assigned to 5 treatments: one non-challenge treatment (CTR+) and four challenged: same diet (CTR-), or supplemented with probiotic strains ($> 3 \times 10^{10}$ cfu/kg each) (PRO), prebiotic (5%) (PRE) or their combination (SYN). After one week, piglets were orally inoculated with F4+ ETEC (1.2×10^{10} cfu). Feed intake, weight gain, fecal consistency and rectal temperature were recorded. On days 4 and 8 post-inoculation (PI), one animal per pen was euthanized and samples of blood, feces and tissues collected. Enterobacteria and coliform counts, fermentation products, ileal histomorphology and serum TNF- α and PigMAP were analyzed.

Results: Group PRO performed better after the challenge than SYN, reducing the number of enterobacteria and coliforms in ileal mucosa scrapes. Fermentation was scarcely modified by the treatments. The challenge promoted an important decrease of villous height at day 4 PI similar in all diets. At day 8 PI, PRO fed animals showed improved recovery of villi height (337^a CTR+, 292^{ab} PRO, 272^b PRE, 269^b SYN, 267^b CTR-; $P < 0.001$). Acute phase protein PigMAP was markedly increased by SYN treatment at day 8 PI (0.51^b CTR+, 0.57^b PRO, 0.56^b PRE, 2.43^a SYN, 0.62^b CTR- mg/ml, $P = 0.003$). Pro-inflammatory cytokine TNF- α was also increased by SYN at day 4 PI (86^{ab} CTR+, 98^{ab} PRO, 75^b PRE, 118^a SYN, 77^b CTR- mg/ml, $P = 0.013$).

Conclusion: To conclude, results show that animals receiving the probiotic combination performed better against the F4+ challenge showing a higher recovery of ileal mucosa. However, these benefits disappeared when probiotics were combined with oligogalactose leading to detrimental effects on growth rate and pro-inflammatory markers.

THE USE OF PROBIOTICS IN SWINE: AN ALTERNATIVE FOR PREVENTING DISEASES

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The use of probiotics is an alternative to the therapeutic treatment of pathological problems in pigs. The source of many of these disorders lies in an alteration of the intestinal microbiota that may be associated with management changes, such as weaning, since the passage from a liquid to a solid diet besides the suppression of the mother's immune contribution constitute the beginning of any of these alterations.

The mechanisms of action of the probiotic strains are based on competitive exclusion phenomena between these and the invading pathogens, the stimulation of the immune response, as well as the optimization of the use of the nutrients received through the diet.

This study aims to make a first approach to the knowledge of the use of probiotics in the porcine species. For that purpose, a series of experimental tests were designed to be carried out in livestock farms that house the different stages of production (lactation and transition), in order to determine the benefits they bring, such as improvement of production rates or decrease in classic medical treatment.

The said components were administered by means of the formulation of a commercial fermented feed that incorporates these ingredients and that was applied in the aforementioned phases. For sampling, different moments were established according to the objectives set.

The results obtained in the trials conclude that the use of product tested can have positive effects on piglet in peri-weaning by reducing the possible inflammatory effects of the lipopolysaccharides of the Gram-negative bacteria and also increased the natural immune response against the Gram-positive bacteria. Finally, the integrity of the intestinal mucosa was favoured, as seems to be inferred from the increase in the height of the intestinal villi.

FERMENTED DAIRY FOODS: IMPACT ON INTESTINAL MICROBIOTA AND HEALTH-LINKED BIOMARKERS

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Aims: The intake of fermented foods is gaining increasing interest due to their health-promoting benefits. Among them, fermented dairy foods have evidenced association with obesity prevention, and reduction on the risk of metabolic disorders and immune-related pathologies. Fermented foods could lead to these health benefits by providing to the consumer with both, easily metabolizable nutrients and beneficial microorganisms. Our aim was to evaluate the possible relationship between the consumption of fermented dairy products and the intestinal microbiota, serum lipid profile and the pro-oxidant/inflammatory status.

Methods: 151 healthy adults (age 57.9 ± 17.4 y) were evaluated. Dietary fermented food intake was assessed by an annual