

# Potential of varying complex feed supplements based on synbiotic additives to improve fecal consistency and reduce need for medical treatment in weaned piglets

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## Background and objectives

There is a growing pressure to wean piglets without the use of antibiotics or pharmacological levels of zinc oxide. The aim of our study was to investigate the effects of two differently complex synbiotic-based products on fecal consistency and growth performance in weaned piglets. A special focus was given on the potential of these products to reduce medical treatments such as therapeutic use of antibiotics or zinc oxide.

## Material and methods

Two feeding trials at commercial farms were conducted. In Trial A, a synbiotic combination of pro- and prebiotics (SYN) was tested, whereby in Trial B a more complex product based on different synbiotic and immune-modulatory components (cSYN) was tested.

In Trial A, 360 weaned piglets (DanBred x Piètrain, 21 d of age, Ø 5.66 kg body weight (BW)), were allocated to 2 treatment groups ( $n=4$ ). Control group was fed standard diet (CON A) and treatment group was fed standard diet plus 0.1% SYN (TripleP<sup>®</sup>, Biochem), which is a combination of a bacillus-based probiotic (*B.subtilis* + *B.licheniformis*) and yeast-based prebiotic. Following parameters were observed: Fecal score (1 - liquid diarrhea, 2 - pasty, 3 - formed feces, 4 - well-formed feces, 5 - hard feces), medical treatments, mortality, BW (d 20, d 42) and feed intake. In case of diarrhea diagnosis (Score  $\leq 2$ ) individual treatments with antibiotic (Enro-Sleecol<sup>®</sup> 50mg, Albrecht) were conducted. Statistical analyses were performed by one-way ANOVA using SPSS-software. Differences at  $P<0.05$  were considered as significant. Trial B was more characterized by a field experience, where a commercial farm was chosen in co-operation with a veterinarian due to high incidences of *E. coli*-related diarrhea and the routinely usage of therapeutic zinc oxide (2250 ppm). Three following cycles were observed with 420 piglets (Ø 6.9 kg BW) per cycle weaned at 28 d of age. During cycles 1 and 3, piglets were fed standard diet plus 0.5% cSYN (Bimulac<sup>®</sup> Weaner, Biochem) from 3 d before until 10 d after weaning. Cycle 2 served as control, where standard diets have been fed without further dietary or medical supplementation (CON B). Focused parameters in Trial B were fecal scores and diarrhea incidences in first 14 d after weaning.

## Results

In Trial A, piglets already showed slightly reduced fecal scores ( $\leq 3$ ) at day of weaning. SYN improved mean fecal consistency (d 1-14) after weaning. At d 7 after weaning SYN-fed piglets showed normal fecal scores of 4, whereby fecal scores from control piglets were reduced until d 15. Consequently, piglets from SYN-group recovered much earlier from slightly reduced fecal scores ( $\leq 3$ ) after weaning and showed lower diarrhea incidences. Less need for therapeutic antibiotic treatments and lower mortality was observed. No statistical difference was observed in zootechnical performance, however piglets from SYN-group had an increased BW-gain by +4.7% and an enhanced feed intake by +4.3%. Final BW were at  $23.4 \pm 1.7$  kg in CON A-fed piglets and at  $24.3 \pm 1.6$  kg in SYN-fed piglets.

In Trial B, piglets fed cSYN showed no diarrheal fecal scores during 14-day test period. Fecal consistency from piglets of CON B-group started with optimal fecal scores (4), but scores dropped down on d 4 after weaning. At d 7 fecal scores were  $\leq 2$  and diarrhea incidence was at a level, that medical treatment was necessary. Piglets were given therapeutic zinc oxide and recovered to optimal fecal scores until trial end (d 14).

## Conclusion and discussion

The use of synbiotic feed supplements seems to be an effective tool to prevent post-weaning diarrhea and reduce the need for medical treatments in weaned piglets. The complex synbiotic feed supplement showed the strongest effect being comparable to those effects observed for therapeutic zinc oxide used in CON B-group during Trial B or in the past on the trial farm. Since post-weaning diarrhea is a multi-factorial problem, further studies should investigate the effects of synbiotic feed supplements under different practical conditions.