AWN-PP-01

TITLE

IN VIVO EFFECT OF A COMPOUND FEED THAT IS BENEFICIAL FOR INTESTINAL HEALTH AND GROWTH IN WEANING PIGLETS IS PREDICTED BY IN VITRO ANALYSES

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CONTENT

Background & Objective
We analyzed whether a compound feed based on maternal milk fatty acids and cholesterol increases piglet performance. A randomized controlled study and two field trials were preceded by in vitro analyses.

Materials & Methods
Transwell cell culture analysis comprising of Caco-2 cells was used to study effects of an in vitro digested compound feed on trans epithelial electrical resistance (TEER) and interleukin-8 (IL8) secretion after challenge with mycotoxin deoxynivalenol (DON). After that, effects on health and growth were analyzed in a controlled in vivo trial and two controlled field trials. In the field trials, the compound feed was administered from day 4 of life, until 5 days after weaning, i.e. day 33.

Results
In vitro the compound feed counteracted the reduction of TEER and the increase of IL8 excretion in Caco-2 cultures challenged with DON. In a controlled in vivo trial, the compound feed lead to increased average daily weight gain before weaning as compared to control. Plasma alkaline phosphatase and IL8 and intestinal villi length were improved in the experimental group as compared to the controls. For the field trials, compound feed was mixed with a semolina of puffed wheat. In field trial 1, this increased feed uptake before weaning by over 50% and body weight at day 61 by 2 kg. In field trial 2, compound feed was compared to a premium milk replacer. Slaughter weight was 2.5 kg higher in the compound feed group as compared to the milk replacer group.

Discussion & Conclusion
Positive in vivo results of the compound feed on health parameters in pigs were predicted by in vitro tests, indicating the translational value of such tests.