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Vespa

Influence of dietary nucleotides in postweaning-challenged piglets on intestinal proinflammatory cytokines

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Introduction. Dietary nucleotides in piglets could help to cope with the stressful phase of weaning by the positive effects on immune response and intestinal health status with a lower incidence of enteric diseases and a consequent increased performance, especially with pathogens presence in the gut. The aim of the study was to evaluate the effects of nucleotides inclusion in the diet of piglets on ileal proinflammatory interleukin gene expression.

Methods. Thirty-six weanling piglets (21 d of age, 7.85± 0.32 kg) were used in 28 days study. Piglets were allotted to 2 homogeneous groups (C, N) and fed the basal diet supplemented with nucleotides (UMP 88.05%, GMP 5.51%, AMP 3.82%, CMP 1.94% and IMP 0.68%; 0.8g/head/day in 2.1ml water solution) or not. On day 14 from the beginning of the trial at both experimental groups were challenged with 1x109 CFU/g E. Coli 0149:F4(K88). Growth performance and fecal score were evaluated weekly, while blood samples for immunological serum parameters, Fe and Vitamin B12 serum content were collected on day 0, 13, 18 and 26. Proinflammatory IL1a, IL1b, IL6, IL10, and TNF, TRL2 and TRL4 gene expression in ileal Peyer patches were evaluated at slaughtering after individual tissue sample collection by RT-PCR and β-actin as housekeeping gene.

Results. Growth performance was not affected by dietary treatment, while fecal score was ameliorated in N piglets ($P<0.05$). Haptoglobin serum content was decreased in treated pigs (0.56 mg/ml vs 0.48 mg/ml; $P<0.01$). The dietary treatment did not affect serum Fe content, while higher vitamin B12 levels were found in nucleotide-fed animals (239.44ng/dl vs 225.39ng/dl; $P<0.05$). Higher IgG content was found in N pigs than control group (5.00mg/dl vs 4.83mg/dl; $P<0.05$). At slaughtering IL6, IL10, TNF, TRL2 and TRL4 gene expression were decreased in nucleotide-fed pigs than control group ($P<0.01$).

Conclusions. Dietary nucleotides supplementation in postweaning piglets can positively affect gut health status, ameliorating inflammatory response and digestibility of nutrients in microbial stress conditions.

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