

One hundred-and-twenty crossbred piglets weaned at 24 day-old (Landrace x Large White x Duroc) from both sex were randomly allocated to 2 treatments, each treatment had 8 replications. Piglets from the first treatment (CTRL) received commercial prestarter and starter diets for 35 days. Piglets from treatment 2 (CTRL+AA) received the same diets supplemented with 1 kg/T of a mix of functional amino acids containing arginine, branched-chain amino acids and cystine. Body weight and feed intake were measured at 1, 14 & 35 days of the experiment. Average daily feed intake (ADFI), average daily gain (ADG) and feed conversion ratio (FCR) were calculated. At d14, 8 piglets per treatment were slaughtered and gut morphology was assessed in tissue sections of the jejunum.

During the prestarter phase, the piglets supplemented with the AA mixture exhibited increased ADFI ($P=0.025$), ADG ($P=0.006$) and reduced FCR ($P=0.050$) compared to CTRL piglets. When considering the overall period of the trial, ADG, but not other parameters, was significantly increased in CTRL+AA ($P=0.034$) piglets compared to CTRL piglets. In addition, CTRL+AA piglets exhibited a significant decrease in crypt depth ($P=0.007$) and significant increase in villus height : crypt depth ratio ($P<0.001$) compared to CTRL piglets.

Altogether, those results show the beneficial effects functional amino acids supplementation on piglet performance after weaning. These effects could be partially related to an improvement of gut morphology.

P163. Interaction between a potentiated formulation of ZnO and a mixture of tannins to reduce post-weaning-diarrhoea in an ETEC infection model Dietary fumonisins potentially modulate some health indicators in weaned piglets

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Given the emergence of multidrug-resistant bacteria, there is an urgent need for alternative methods to antimicrobials to prevent or treat piglet Post Weaning Diarrhoea (PWD). This study aimed to evaluate a potential interactions between a zinc oxide (ZnO) source formulation and a tannin mixture to improve performances of piglets in a model of enterotoxigenic *Escherichia coli* F4 (ETEC F4) infection. In total, 88 piglets (27.2 ± 0.9 days of age; 7.3 ± 1.0 kg), genetically susceptible to ETEC F4, were randomly assigned to four groups. A tannin-rich extract (TA) of chestnut and Quebracho (Silvafeed@Nutri P, Silvateam, Italy) was fed to the TA group (0.75% in feed). The nZnO group received a feed containing 150 ppm zinc from potentiated ZnO (HiZox®, Animine, France). The nZnO + TA group received a feed containing tannins and nZnO at the same doses as before. The C group received a standard feed formulated according to Swiss recommendations. Four days after weaning, piglets were infected with ETEC F4. Weight, daily intake per pen and faecal ETEC F4 levels were analysed with linear (mixed) effect models. Faecal scores were analysed with a cumulative link mixed model. Piglets with severe diarrhoea for five consecutive days were treated with antibiotics to ensure their welfare. Number of antibiotic treatments were compared with a fisher exact test. C group piglets had severe diarrhoea, and 18% had to be treated with antibiotics, compared to less than 4% in the other groups ($P=0.05$). Tannins and ZnO reduced faecal scores in the TA and nZnO + TA groups ($P<0.005$). Feed consumption in the TA and nZnO + TA groups was better than that in the C group (+0.05kg/d, $P<0.04$). The addition of ZnO and tannins reduced the

number of antibiotic treatments, but only tannins increased feed consumption and decreased diarrhoea severity.

P164. Dietary fumonisins potentially modulate some health indicators in weaned piglets

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The fumonisin B1 (FB1) congener of the mycotoxin fumonisin (FUM) is of imperative toxicological importance followed by FB2 and FB3, contaminating predominantly maize. The essentiality of maize in their diets means that pigs are invariably at risk of FB1 intoxication. This study investigated the effects of 0, 15 or 30 mg FUM (FB1 + FB2 + FB3)/ kg contaminated diet in modulating some health indicators in piglets. Eighteen weaned piglets of 7 weeks old were divided into three groups and fed the three different diets for 21 days. Serum biochemical measurements, antioxidant parameters (malondialdehyde, glutathione and glutathione peroxidase) of kidney, lung, liver, and plasma to examine oxidative damage, and histopathological examination of liver, kidney, and lung were performed. A one-way ANOVA with Tukey post hoc test of SPSS version 20.0 software was used. Dietary FUM did not affect ($P > 0.05$) the overall growth performance or the antioxidant parameters' measurements. Nonetheless, a significant ($P < 0.05$) increase of blood total protein, aspartate transaminase (AST), creatine kinase (CK), creatinine, and cholesterol was observed in a dose-response fashion. The increased activity of AST and cholesterol are indicative of hepatic damage which was histologically marked by a decreased glycogen content and necrosis of hepatocytes in piglets that received 30 mg FUM /kg diet compared to either control or 15 mg FUM /kg fed piglets. The rise in the levels of CK and creatinine corroborates the renal histopathological findings of tubular epithelial detachment and degeneration including scattered inter-tubular foci of lymphohistiocytic infiltrations in the 30 mg FUM /kg group. In the lungs of both 15 and 30 mg /kg groups, mild focal lymphohistiocytic infiltrates were visible interstitially, and also mild focal fibrotic thickening of the pleural covering the lungs was observed. These outcomes suggest a potential immunological disruption of weaned piglets exposed to increasing levels of dietary FUM.

P165. Effect of the maternal diet and growth rate in the suckling period on nutrient uptake in the jejunum of piglets

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During the suckling period, growth rate is highly heterogeneous between piglets. Harmonising growth rate during this period is