the functionality and integrity of the gut, growth performance and health of post-weaning piglets. 96 healthy piglets, selected from a farm where the tested vaccine was not being used and pathogenic Escherichia coli F4 and/or F18 were previously isolated, were weaned (23.30 ± 1.85 days; 7334.3 ± 1038.6 g, d0) and divided into two groups (16 replicates/group; 3 piglets/replicate) as follow: 1) Control (CO), fed with a standard diet; 2) Treated (TRT): as CO but vaccinated with the non-pathogenic F4/F18 oral vaccine (F4ac-positive 1.3 × 10^8, F18ac positive, 2.8 × 10^8 CFU) at d0. Piglets were weighed at d0 and weekly until d35. The faecal score was recorded during the trial. At d10 and d35, jejunum samples were collected for morphometric and immunohistochemistry analysis. Data were fitted using a linear model including treatment and litter as fixed and random factors, respectively. Overall, piglets were healthy (average faecal score < 3). From d0 to d14, the TRT group had a lower faecal score ($P < 0.008$; CO = 2.35, TRT = 2.13), a higher daily feed intake (ADFI) ($P = 0.022$) and tended to have a higher average daily gain (ADG) ($P = 0.08$). The crypt depth was higher in the CO group ($P = 0.04$) at d10 while it did not differ at d35. The jejunal protein expression of Claudin-4 was higher in the TRT group at d10 ($P < 0.0001$) and d35 ($P = 0.0004$). Overall, the F4/F18 oral vaccine contributed to reducing the impairment of gut health due to weaning stress recognized by the better condition of tight junction and morphology of the gut and drier faeces that can explain the higher ADFI and ADG of piglets.

P185. A synergistic blend of organic acids in drinking water of piglets supports post-weaning growth performance – a meta-analysis

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Weaning stress impairs pigs' digestive capacity and growth. Organic acids can support healthy gut and growth performance. A meta-analysis was conducted to evaluate the effect of a synergistic blend of free and buffered short-chain fatty acids (SPH) as a water supplement on the growth performance of piglets. Nine studies conducted in six countries were considered for the analysis of growth parameters and four studies for the analysis of water intake. In all studies, weaned piglets (n = 2068, 7.3 kg start weight, and 25 days of age) were assigned to one of two treatments: 1) control (no water acidifier) and 2) SPH (acidified water) added to reach a water pH of 3.8 and supplied over the entire nursery period (5-6 weeks). All piglets were provided with a diet free from AGP. The raw data of individual studies were integrated and the effect of treatment on overall performance was analysed using mixed models in SAS considering the within-study and between-study variations. In addition, a meta-regression modelling the effect of treatments over time was performed to assess the effect of SPH at various growth phases.

Over the entire post-weaning period, SPH significantly improved water intake (22%), feed intake (4%), body weight (5.8%), ADG (8.3%), and FCR (1.3%) of piglets. The results of the meta-regression showed that the effect of SPH on ADG was consistent throughout growth phases, while the effect on body weight was significant from two weeks until the sixth week. The effect on feed intake was significant during the first two weeks and last two weeks of supplementation, whereas the influence on FCR was limited to the first three weeks only.

In conclusion, SPH application in the drinking water of piglets strongly supported the growth and feed utilization during the first three weeks post-weaning and improved production performance over the entire nursery phase.

P186. Effects of maize naturally contaminated with deoxynivalenol and of dietary anti-oxidants on oxidative stress in fattening pigs

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A study was undertaken to determine whether dietary antioxidants (AO) could limit oxidative stress and alteration of vaccine immune response resulting from exposure to deoxynivalenol (DON). 160 growing-finishing pigs received for 91 days (d) feeds containing a naturally DON contaminated (1.90 mg/kg) maize or control, and enriched (AO +) or not (AO-) with antioxidants (100 IU Vitamin E; 0.19 mg Se sodium-selenite and 0.20 mg Alkosel® selenium-yeast; 500 mg Fermaid SSR® rich in glutathione-peroxidase; 15 mg Melofeed® rich in superoxide-dismutase). DON concentration in feeds was calculated at 1.49 mg/kg. Pigs were vaccinated on d9 against PCV2 (Ingelvac CircoFLEX®). 48 animals were sampled for ELISA determination of serum IgA, IgG and anti-PCV2 antibody levels at d34 and d75, blood peroxide spectrophotometry and half-haemolyse measurement of whole blood and red blood cells (RBC) exposed to a controlled free-radical attack at d40 and d75. Statistical analysis used a mixed model including fixed effects of DON, AO, sex, sampling-day and interactions, with animal as subject of repeated measurements. Peroxides in blood were unexpectedly lowered by DON at d40 ($P = 0.15$), whereas it was increased by DON at d75 ($P = 0.35$; DON × day interaction, $P = 0.01$). Anti-haemolyse capacity was increased by antioxidant supplementation at d40 for blood ($P < 0.001$) and at d75 for RBC ($P < 0.001$), but was not influenced by DON. Anti-PCV2 antibodies of DON AO- pigs were lower than for other pigs at d34, but were higher at d75 (Expo × AO × day interaction; $P = 0.04$). Serum IgA and IgG concentrations increased between d34 and d75 ($P < 0.001$), and IgG increase tended to be higher for DON pigs than for control pigs ($P = 0.08$). For control pigs, antioxidants tended to decrease IgA levels at d34 ($P = 0.11$), while DON AO + pigs had numerically higher IgA levels than DON AO- pigs (Expo × AO interaction; $P < 0.10$). In conclusion, DON and antioxidants may have cross-effects on oxidative stress and immune status.

P187. A Multi-Component Approach to Optimize Nursery Piglet Immunity Starting with the Sow

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Weaning is one of the most stressful events in pig's life and affect the immunity of piglets varies, and pigs own immune system is a critical defence mechanism. Thus, optimizing the piglet's immune system start at the foetal period and continue until the post-weaning nursery stage may support piglets against weaning stress. The hypothesis is the supplementation of Immunity Solution containing immune cell proliferation