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TITLE

MICROBIOTA REGULATION IN INTESTINE OF PIGLETS FED DIFFERENT COPPER SOURCES AND DOSES

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CONTENT

Background and objectives Copper (Cu) can improve piglet growth performance during the post-weaning period when it is supplied at a high dose (160 mg/kg) in the diet, but its mode of action is not fully elucidated. Its antimicrobial properties are under investigation. The aim of this study was to evaluate the effect of Cu supplementation in sulfate and in oxide forms on the gut microbiota of weaned piglets. **Material and methods** The trial was carried out with 600 piglets weaned at 26 days and divided into 6 experimental groups (10 pens per group, 10 piglets per pen). For 5 weeks, they were fed copper sulphate (CuSO₄) or dicopper oxide (Cu₂O; CoRouge®, Animine) at different Cu levels: 15 mg/kg, 80 mg/kg or 160 mg/kg of Cu. At the end of the experiment, 8 piglets per pen were sacrificed, ileum and colon contents were sampled and selected bacterial populations were analysed by pPCR targeting the 16S ribosomal RNA (rRNA) gene. **Results** The results showed no significant differences in total bacterial 16S rRNA gene copies. Increasing the Cu dose led to decreasing abundance of Firmicutes in the ileum. Compared to CuSO₄, Cu₂O at high dose decreased *Escherichia coli* abundance in the colon, but Cu₂O tended to be more effective (0.010% vs. 0.047%, respectively; P = 0.053). **Discussion and conclusions** These results are in agreement with those obtained for growth performance: increased Cu dose was related to an increase in weight gain, with higher weight gain for Cu₂O (P < 0.09). Therefore, Cu supplementation can regulate microbiota composition with positive effects on animal performance.