

## Effect of different zinc formulations in piglet diets compared to pharmacological dosage of zinc oxide

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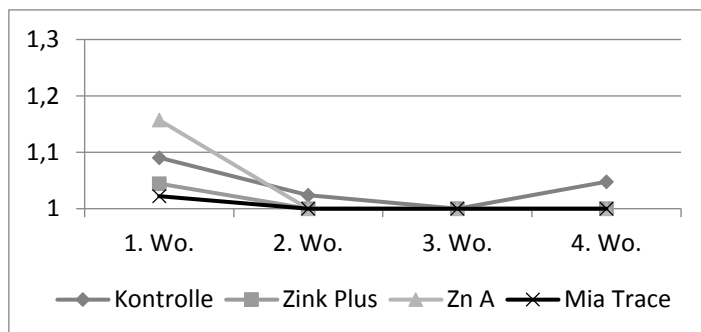
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**Background and objectives:** Post-weaning diarrhea is commonly caused by the pathogen *Escherichia coli* and causes considerable economic losses in rearing piglets. The pharmacological use of zinc oxide (ZnO) in high dosage (e.g. 2,500 ppm Zn / kg diet) has yet demonstrated beneficial effects on growth performance in piglets as well as the prevention of diarrhea. At the same time high dosage of ZnO as heavy metal influences environmental negatively and increases antibiotic resistances. Therefore, ZnO supplementation of high dosage is banned in several EU countries. The objective of the current study was to investigate the effects of two “new” zinc formulations compare to conventional ZnO with different dosages (95 ppm and 2,200 ppm).

**Material and methods:** The piglets selected for the experiment were divided into 4 groups with addition of zinc out of different formulations with different dosages: 1. Control (95 ppm Zn from ZnO); 2. Zn Plus (2,200 ppm Zn from ZnO); 3. Zn A (95 ppm Zn from highly porous ZnO); 4. MiaTrace Zn (95 ppm Zn from protected ZnO and zinc sulphate). The study includes totally 365 weaned piglets (Ø 8.3 kg), which were divided into six replicates. Each group received their experimental zinc formulation to an identical basal diet from day 1-14. At day 15 up to the trial end of day 28, all groups received the same diet with 95 ppm zinc out of ZnO. Performance, including average daily weight gain (ADG), average daily feed intake (ADFI) and faeces consistency were measured. The statistical analysis was carried out using Startgraphics plus (version 5). The significant level was set to  $P < 0.05$ .

**Results:** The piglets fed the high dosage of ZnO (714 g) and MiaTrace Zn (719 g) increased their ADFI significantly compared to control (645 g) and highly porous zinc formulation (655 g). The supplementation of MiaTrace Zn had the highest ADG (392 g) of all groups and improved significant by 10.1 % compared to the control (356 g/day). The ADG of piglets from Zn Plus (383 g) and Zn A (369 g) were between these two groups. Performance differences between the first two weeks and the second two weeks were observed.

Fig. 1: Assessment of faeces consistency



Overall, a good faeces scoring was found throughout the trial period. Only in one replication some problems were seen. In contrast to the other groups, many piglets of Zn A showed diarrhea symptoms in the first week in this replication. In second week, no or only isolated (control) thin faeces were found.

**Conclusion and discussion:** Performance parameters were significantly higher with MiaTrace Zn compared to control and porous zinc and numerically to high dosage of ZnO. The faeces scoring indicates an improved consistency in piglets fed with MiaTrace Zn. Therefore, MiaTrace Zn is able to reduce the incidence of post-weaning diarrhea and increase performance data with a legal level ( $< 150$  ppm) of zinc supplementation.