Source of organic zinc, manganese and copper did not affect piglet birth weight

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Background

The use of organic trace minerals in sow diets has been associated with increasing litter size without compromising average birth weight as well as sows giving birth to litters with a lower proportion of low-birth-weight piglets. The production process of organic trace minerals may cause differences in their stability and affect their bioavailability.

Objective

The aim of this study was to compare the effect of two different sources of organic trace minerals fed to hyper-prolific sows on piglet birth weight.

Materials and Methods

- The trial was conducted in a commercial Danish herd with 1,900 sows using DanBred genetics.
- All sows were randomly allocated to two treatment groups based on parity at the previous farrowing, and thus the study included only second to seventh parity sows
- All diet formulations and feeding curves were similar in both treatment groups and the only difference was the partial replacement of inorganic sources of trace minerals (Figure 1).

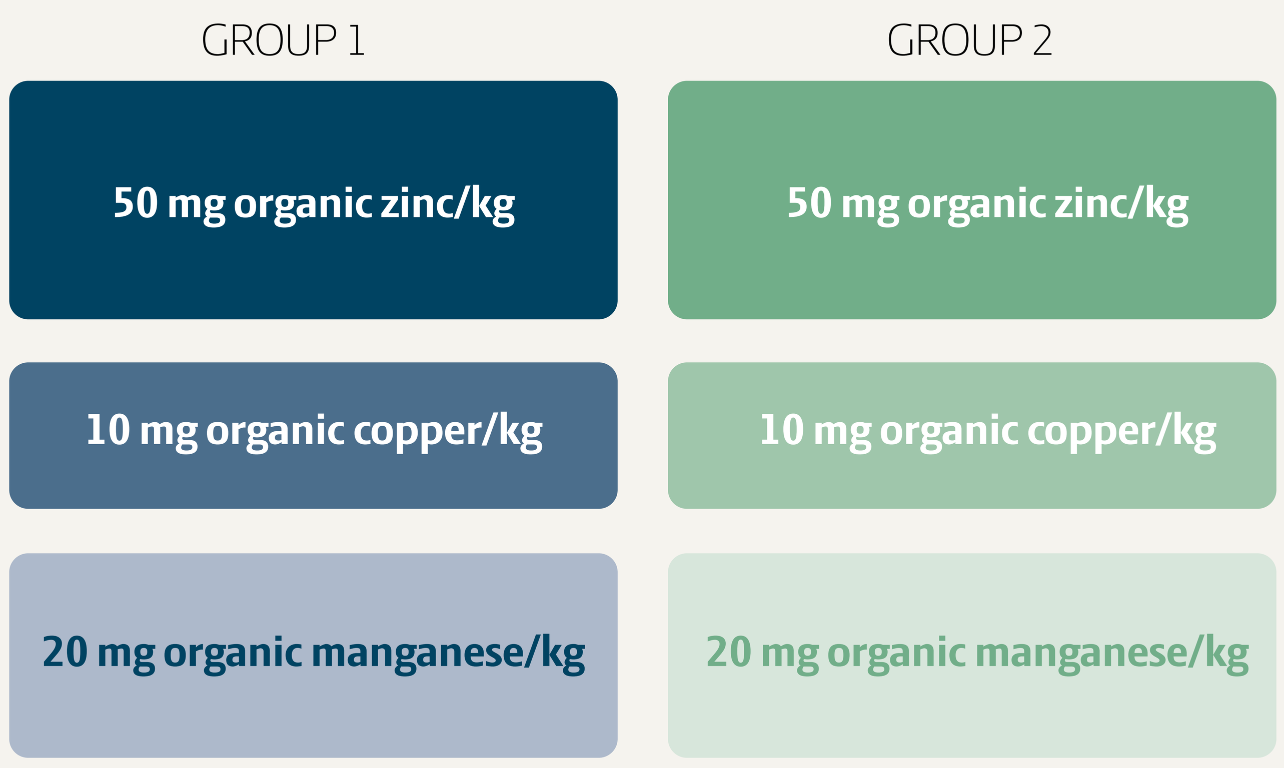

FIGURE 1. Description of partial replacement of inorganic trace minerals with their organic counterparts in group 1 (■; B-TRAXIM 2C, Pancosma) and group 2 (■; Availa® Performance Minerals, Zinpro Corporation), respectively. Inorganic trace minerals were added to adjust the total content of trace minerals to fulfill Danish nutrient standards per energy unit (100 mg zinc; 17 mg copper, 40 mg manganese).

- Sows received the same dietary treatment throughout the previous lactation and gestation periods.
- At birth liveborn and stillborn piglets per litter and individual birth weight of all piglets were recorded within 0-7 hours after farrowing.
- A total of 168 and 169 sows and their litters were included in the data set for groups 1 and 2, respectively.
- Data was analyzed in R considering each sow and its litter as the experimental unit. Results are presented as LSMeans and 95 % CI unless otherwise stated.

Results

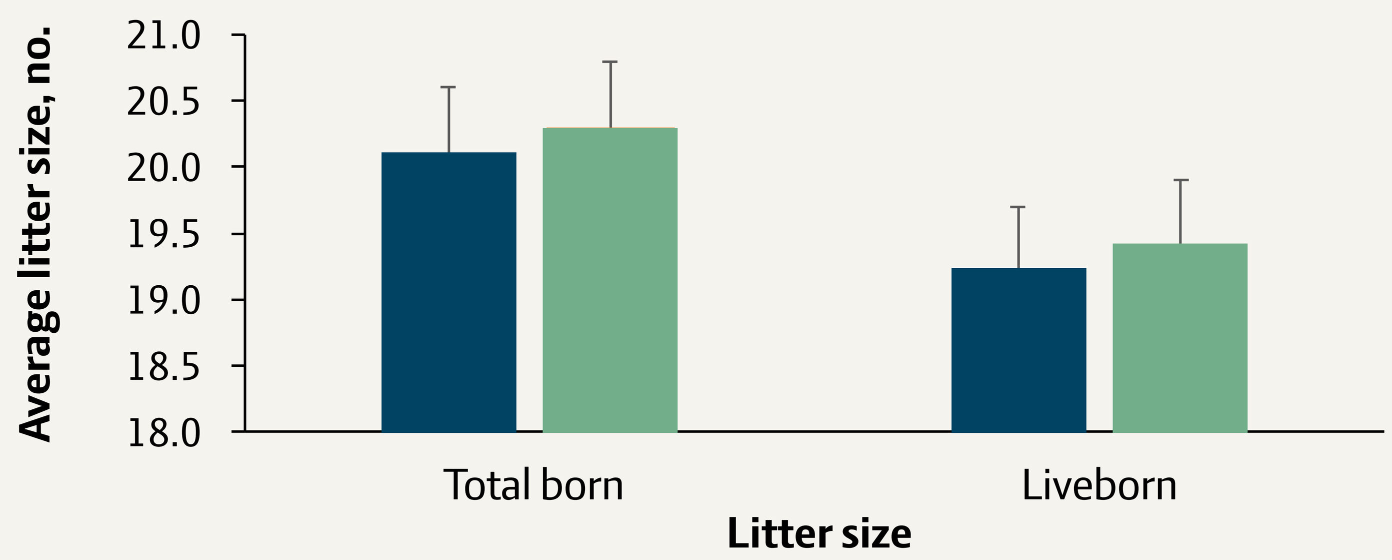

FIGURE 2. Effect of source of organic trace minerals, either glycinates (■) or 1:1 amino acid chelates (■) on average number of total born piglets (P=0.620) and liveborn piglets (P=0.507) per litter. Values are presented as LSMeans and 95% CI.

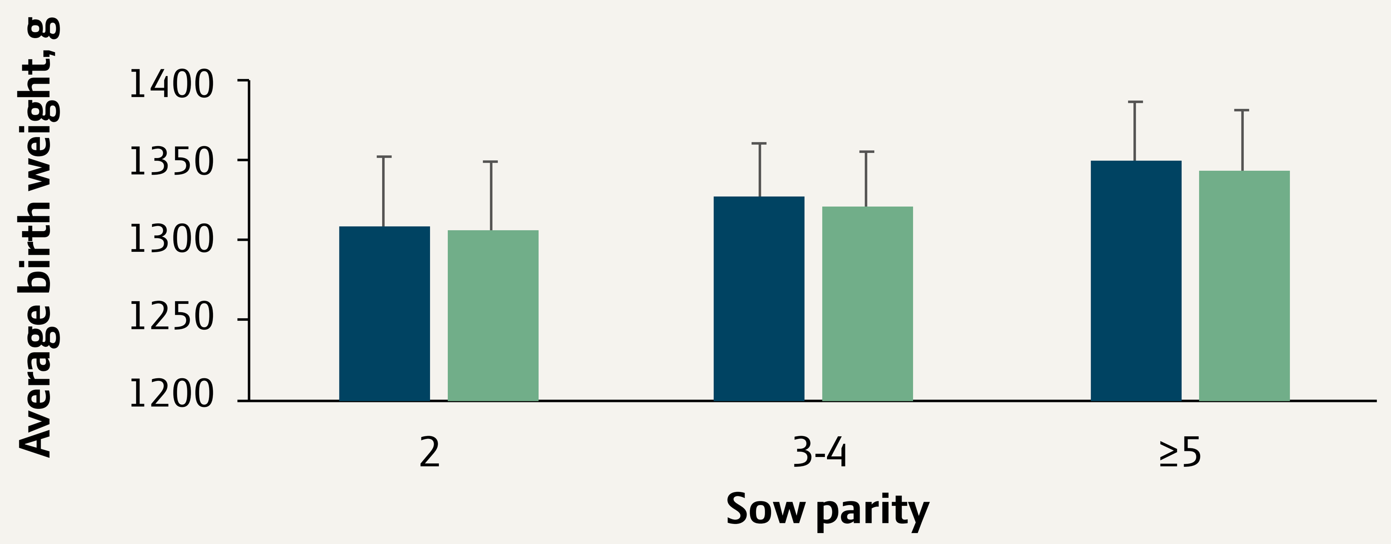

FIGURE 3. Effect of parity and source of organic trace minerals, either glycinates (■) or 1:1 amino acid chelates (■) on average birth weight of liveborn piglets (P=0.516). Values are presented as LSMeans and 95% CI.

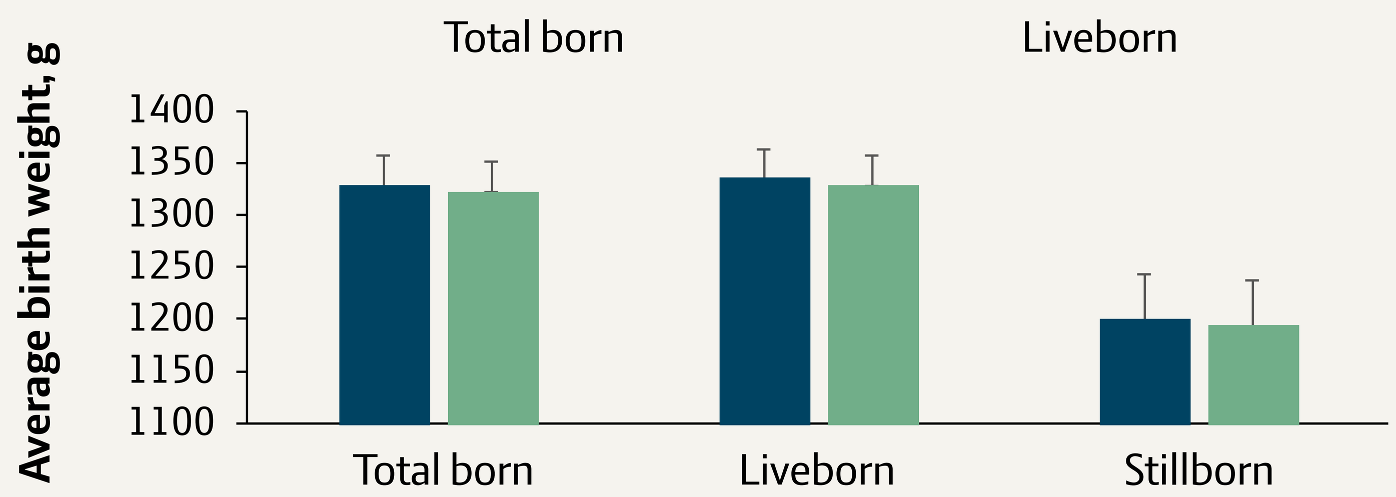

FIGURE 4. Effect of source of organic trace minerals, either glycinates (■) or 1:1 amino acid chelates (■) on average birth weight of total born, liveborn, and stillborn piglets (P=0.723). Values are presented as LSMeans and 95% CI.

Conclusion

The replacement of the source of organic trace minerals from glycinates to 1:1 amino acid chelates did not affect litter size or birth weight of piglets in hyper-prolific sows.

A group where sows were fed only inorganic trace minerals was not included this study, and thus the effect of partly replacing inorganic trace minerals with their organic counterparts on birth weight remains unanswered.

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