

Technical Bulletin

Information from Phibro Technical Services

Effects of Different Zinc Mineral Sources on Nutritional Bioavailability and Performance of Broilers

Executive Summary:

- Supplemental zinc levels targeted 100 ppm over control diet levels, matching nutritional guidelines for Cobb500 broiler chicks
- Chicks fed supplemental Vistore™ Zn had significantly greater body weights ($P \leq 0.05$) by week three of the treatment period.
- No significant increase in performance values were observed in chicks fed zinc sulfate or competitor ($P > 0.05$).
- No significant differences between treatments were reported for average daily feed intake or average daily gain ($P > 0.05$).
- All treatment groups had significantly ($P \leq 0.05$) greater serum zinc concentrations when compared to control-fed chicks.
- Bone and liver zinc levels were improved in all treatments over control-fed chicks.

Materials and Methods:

- 96 Cobb500 straight run broiler chicks reared in battery brooders with raised wire floors
- 2 birds/cage; 48 cages total: 12 cages/diet
- Chicks were fed a zinc-deficient starter diet from 0-8 days of age and test diets from 9-30 days of age.
- Animal performance (body weight and feed intake) were measured weekly throughout the treatment period.
- Tissue Zn content (plasma, breast, liver and bone) and organ weights (liver) were recorded after three weeks of test diet consumption.

Treatments

- Control: Basal Zn levels of 28 ppm
- Sulfate: Basal Zn level + 100 ppm Zn from Zinc Sulfate
- Vistore Zn: Basal Zn level + 100 ppm Zn from Vistore Zn
- Competitor: Basal Zn level + 100 ppm Zn from Competitor

Figure 1.

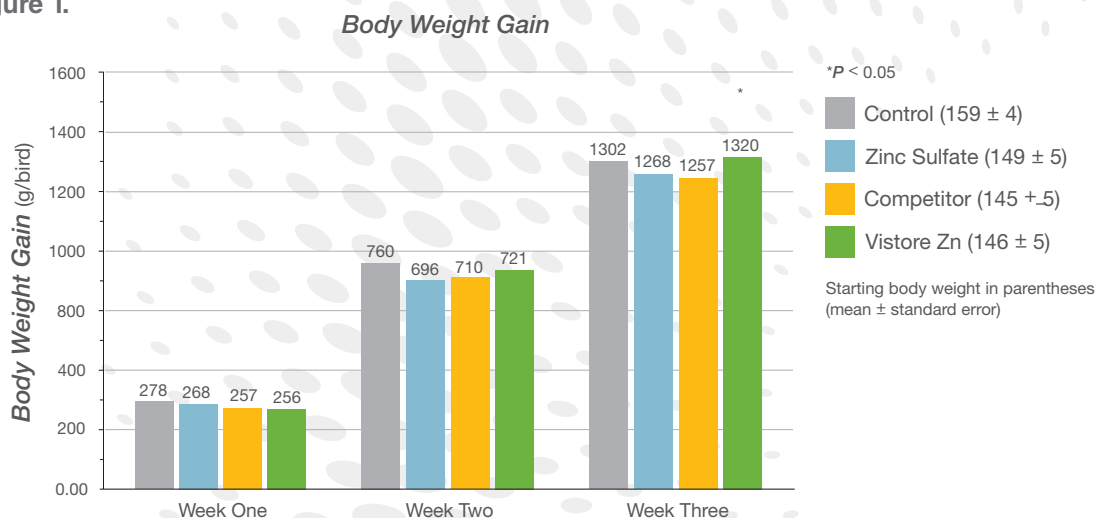
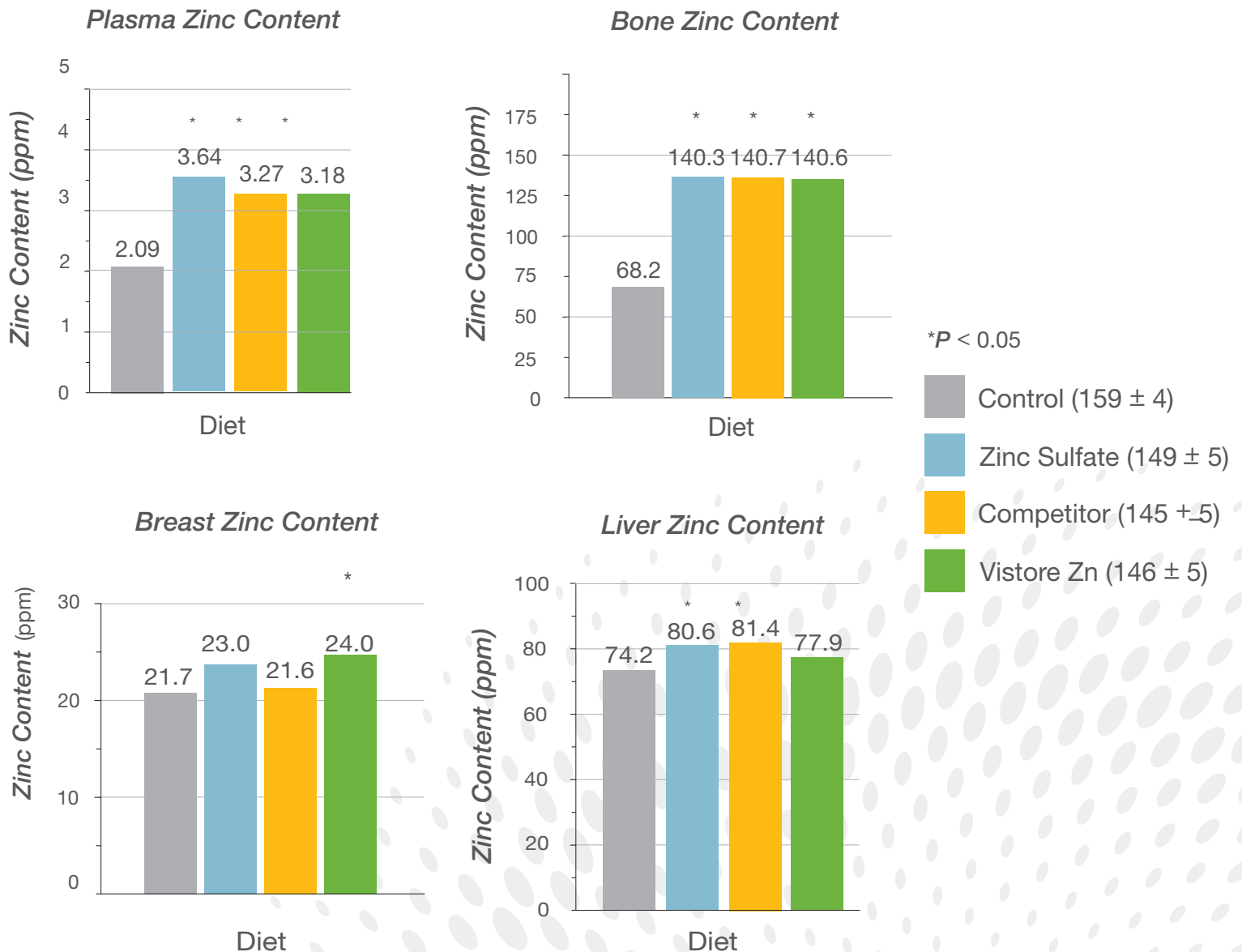


Figure 2.



Conclusion:

Chicks randomly assigned to the Control treatment had slightly higher body weights at the beginning of the trial than other treatment groups. Despite this early advantage, chicks supplemented with Vistore Zn had significantly greater ($P \leq 0.05$) body weights by week 3 of the treatment period (Figure 1), whereas no significant ($P > 0.05$) performance increases were observed in chicks fed Zinc Sulfate or competitor. All Zn tissue data is presented in Figure 2., where all treatment groups reported an increase ($P \leq 0.05$) in zinc plasma levels compared to control-fed chicks. Bone zinc levels represent the long-term implications of zinc content in the diet. In this trial, all treatments reported significant increases ($P \leq 0.05$) in bone zinc levels over control-fed chicks. Liver Zn concentrations were increased in all treatment groups over control-fed chicks, whereas only Zinc Sulfate and Vistore Zn treatment groups reported increased zinc concentrations in the breast. The animal performance data in combination with the bioavailability information reported in this trial indicate Vistore Zn may be superior to alternative zinc sources evaluated in the present study.