Technical Bulletin

Information from Phibro Technical Services

Effects of Different Copper, Manganese and Zinc Mineral Sources on Performance of Broiler Chicks

Executive Summary:

- Supplemental zinc and manganese levels targeted 100 ppm over control diet levels, while copper targeted 15 ppm over Control diet levels.
  - Matching nutritional guidelines for chicks used in this study.
- Body weight and average daily gain were not significantly different ($P > 0.05$ between any of the dietary treatment groups, and animal performance was similar between all treatments.
- Bone manganese and zinc mineralization was significantly improved in all treatment groups when compared to chicks fed a corn/soybean meal Control diet ($P \leq 0.05$).
- Average bone copper mineralization was directionally improved in Vistore®-fed chicks (+31.8% increase over Control and +20% increase over the next highest treatment).
  - Bone copper levels were highly variable across all treatments and the between-treatment differences were not statistically significant ($P > 0.05$).

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 at basal mineral levels (corn/soybean meal diet) prior to treatment assignment at 9 days of age
- Treatment period lasted 21 days, after which time bone mineral content (Cu, Mn, Zn) was determined
- Feed intake and body weights collected weekly to determine animal performance

Treatments:

- Control: Basal Cu (6 ppm), Mn (35 ppm) and Zn (36 ppm) levels
- Sulfates: Control + 20 ppm Cu from Copper Sulfate, 100 ppm Zn from Zinc Sulfate and 100 ppm Mn from Manganese Sulfate
- Vistore: Control + 20 ppm Cu from Vistore Cu 580, 100 ppm Zn from Vistore Zn 590 and 100 ppm Mn from Vistore Mn 540
- Competitor: Control + 20 ppm Cu from Competitor, 100 ppm Zn from Competitor and 100 ppm Mn from Competitor

Figure 1. Average Daily Feed Conversion

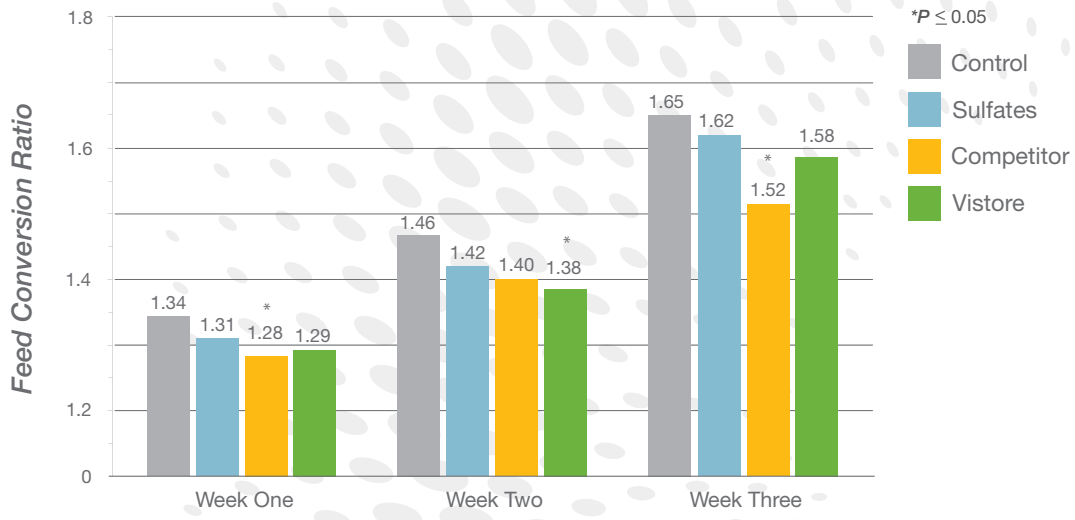

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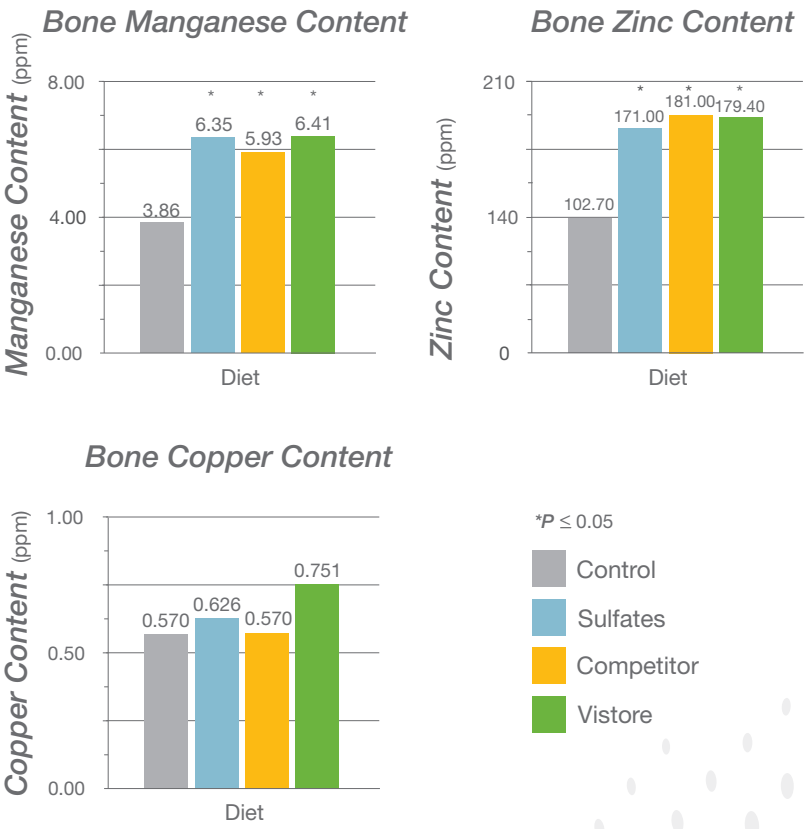
Figure 2.



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, no significant difference ($P > 0.05$) was reported for body weight among the treatment groups at the end of the trial (data not shown). Chicks fed the competitor product reported reduced feed conversion during weeks one and three of the trial ($P \leq 0.05$; Figure 1).

Vistore-fed chicks also had significantly reduced feed conversion during week two of the trial ($P \leq 0.05$) and numerically reduced ($P > 0.05$) feed conversion during weeks one and three (Figure 1). Overall, chick performance measurements (BW and Feed Intake) were similar among treatment groups (data not shown). All treatment groups resulted in significantly ($P \leq 0.05$) increased bone manganese and zinc levels (Figure 2). While bone copper concentrations in chicks fed Vistore Cu 580 were numerically higher than any other treatment group (+31.8% increase over Control and +20% increase over the next highest treatment), these changes were not significant ($P > 0.05$).

This information has been prepared for industry technical professionals.