

### **P304, Effect of chelated copper on growth performance and meat quality in broilers**

**Juxing Chen\*, Frances Yan, Karen Wedekind, Ashley LaMontagne, Mercedes Vazquez-Anon Novus International Inc**

Copper (Cu) has been widely used at high levels as growth promoter in poultry. The role of Cu in woody breast (WB) and white striping (WS) has not been widely studied. There are different forms of chelated and inorganic Cu sources available for the poultry producers to use at different doses. A floor pen study was conducted with 896 day-old male broilers to evaluate the effects of Cu methionine hydroxy-analogue chelate (Cu-MHAC) (MINTREX® Cu, Novus International, Inc.) vs CuSO<sub>4</sub> on growth performance and incidence of WB and WS in broilers. The study consisted of 7 dietary treatments: 0, 30, 60 and 120 ppm Cu-MHAC or CuSO<sub>4</sub>, each with 8 replicate pens of 16 birds. The levels of other minerals from inorganic sources were equal among all treatments. Nutritionally complete corn soybean meal based diets were formulated for starter (0-14 d), grower (15-27 d), and finisher (28-41 d) phases. All diets were pelleted, and starter diet was crumbled after pelleting. All birds were orally gavaged with a coccidiosis vaccine at 10× the recommended vaccination dose on d14. Breast fillets in broilers at 42d of age were scored to 4 categories (normal, mild, moderate, severe) for WB and WS. Performance, WB and WS scores were analyzed by one-way ANOVA and source\*dose factorial, means were separated by Fisher's protected LSD test. Incidence of WB and WS was analyzed by Chi-square. A P-Value ≤ 0.05 was considered statistically different. Compared to 0 ppm Cu, all doses of Cu-MHAC significantly improved performance index (Perfidx), only 60 and 120 ppm CuSO<sub>4</sub> significantly improved Perfidx on d14 and d28; Cu-MHAC significantly improved FCR on d14 (60 and 120 ppm) and d28 (120 ppm), but not CuSO<sub>4</sub> at any doses. There was significant 1) source effect with Cu-MHAC improving FCR on d14, reducing WS score and incidence of moderate WS, and increasing normal fillets; 2) dose effect with 120 ppm Cu increasing the incidence of moderate WB vs 30 ppm Cu, suggesting high levels of Cu may work as prooxidant to cause oxidative stress therefore exacerbating WB. In summary, Cu could improve FCR and Perfidx in broilers of 14 and 28 d of age with better effect of Cu-MHAC vs CuSO<sub>4</sub> on d14, Cu-MHAC improved meat quality by reducing WS score and incidence of moderate WS in broiler of 42 d of age.

**Key Words:** Chelated copper, CuSO<sub>4</sub>, woody breast, white striping, broiler