

T188 Differential Performance Response of Broilers when Fed Cu from Cu - Methionine-Hydroxy-Analogue Chelate vs Sulfate Sources

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Two floor-pen trials studied the effect of feeding Cu at different levels either from MINTREX® Cu or from CuSO₄ on broilers from 1 to 42d of age. A total of 3,000 and 2,800 Ross 500 day-old non sexed chicks were used in trial 1 (E1) and 2 (E2), respectively. In both trials, birds were randomly distributed into 6 treatments with 5 pens of 100 birds (E1) and 9 or 10 reps of 50 broilers (E2). Six dietary treatments consisted of 3 levels of Cu (10, 30 or 120ppm) x 2 Cu sources (MINTREX® Cu- or CuSO₄) arranged in a factorial design. Broilers were fed corn-SBM-wheat bran-DDGS iso-nutritional based diets designed to have a commercial nutrient density across treatments except for added Cu levels. Phytase was used at 0 or 500 FTU's for E1 and E2, respectively. In both trials, pens had reused litter, commercial feeder space allowances and birds were vaccinated against Newcastle disease. The cell-mediated immune response was examined by cutaneous basophilic hypersensitivity test in E1 using intradermic inoculation of phytohemagglutinin. Performance (42d) of both trials was analyzed together in a combined mixed model. For each combined analysis, trial was defined as random. The linear, quadratic and source intercept terms were considered fixed effects. BIC was used as criteria to select the regression model that better describes the data based on goodness of fit. For immune response (E1) and carcass yield (E2), ANOVA and Tukey test were performed. There was no interaction between factors for any performance parameter tested. The interdigital thickness was greater for MINTREX® Cu vs CuSO₄ at all levels indicating a stronger cell mediated immune response ($P < 0.001$). For BWG the average source values across levels for MINTREX® Cu vs CuSO₄ were different at $P = 0.07$. The best fit equation (linear for both sources) predicted better BWG (+32g/bird) FCR (-0.032 points) and EPI (8.4 points) with MINTREX® Cu over CuSO₄ ($P = 0.04$) across all levels, and the comparison between predicted BWG, FCR and EPI values at level 10, 30 and 120 ppm were significantly better for MINTREX® vs. CuSO₄ at every level ($P < 0.05$). Overall, MINTREX® Cu optimized performance over CuSO₄ while optimal levels of added chelated Cu were achieved at 30 or 120 ppms.

Key Words: Mintrex Cu, Copper, Broilers, Cu requirements, Growth promoter