

P305 Evaluation of multiple copper supplements and concentrations on male broiler performance and bile antimicrobial activity

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The objective of the current study was to evaluate the impact of multiple copper supplements on male broiler growth performance and potential bile antimicrobial activity in corn-soy diets. A total of 2560 broilers were assigned randomly to 4 dietary treatments consisting of 16 replicates of 40 Cobb 500 broilers. The experiment was a 2x2 factorial (source x inclusion) design included two sources of copper (copper methionine hydroxyl analogue chelate (CMHAC) and copper chloride (CC)). Birds were fed a starter (d1-14), grower (d14-28), and finisher (d28-38). Average body weight (BW), body weight gain (BWG), mortality adjusted feed conversion ratio (FCR), feed consumption (FC) and mortality (%) were determined on days 14, 28, and 38. On day 38, 4 birds were randomly selected from alternating blocks (32 pens total) for collection of bile to evaluate any potential antimicrobial activity associated with varying copper source and level. Data was analyzed via a 2 x 2 factorial ANOVA with main effect means deemed significantly different a $P \leq 0.05$. On d 28 and 38, broilers fed diets containing 120 ppm Cu significantly increased BW compared to the 30 ppm, additionally; BWG during the finisher phase was improved with the higher inclusion rate of copper. An impact of copper source was also observed as CMHAC fed broilers exhibited an elevated BW at day 28 ($P=0.018$) and 38 ($P=0.031$) compared to CC. This was associated with an increase ($P=0.028$) in BWG during the grower phase of production. Differences in BW and BWG were associated with a higher rate of FC as 120 ppm fed broilers consumed elevated ($P=0.005$) levels of feed as compared to 30 ppm and the CMHAC fed broilers consumed an elevated ($P=0.027$) level of feed compared to CC. Differences in FCR were observed only during the finisher phase of production as higher levels of copper decreased (0.043) FCR and the CMHAC fed broilers exhibited a lower FCR compared to CC. The bile collected from at the conclusion of the experiment did not result in any zone of inhibition when applied to plates of Salmonella Typhimurium, Staphylococcus aureus or Clostridium perfringens. These data suggest that copper level and source can impact broiler growth performance.

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