Effects of Dietary Copper Source and Level on Growth, Organ Weights and Carcass Characteristics of Cherry Valley Meat Ducks

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Abstract: Tri-basic copper chloride (TBCC®, 58% copper; Micronutrients, Indianapolis, Indiana, USA) and copper sulfate pentahydrate (25% copper) were evaluated as dietary supplements at substantially higher than requirement levels for improving growth and carcass characteristics of ducks. Newly hatched Cherry Valley meat-strain ducklings (1,280) were assigned randomly to 4 treatment groups and fed a basal diet supplemented with 1 of the following: 1) 10 mg copper/kg diet from TBCC® (control; standard diets); 2) 150 mg copper/kg from copper sulfate pentahydrate; 3) 150 mg copper/kg from TBCC®; or 4) 0 mg added copper/kg (8.9 and 7.2 mg copper/kg in starter and grower by analysis) but with antibiotic growth promoter (40 mg zinc bacitracin and 40 mg garlicin/kg). Feed/gain ratios of high TBCC® and of antibiotic-fed ducks from 21-42 and 0-42 d were improved (p = 0.045; p = 0.029) vs. control ducks, with high copper sulfate pentahydrate results intermediate. The high TBCC® group had lower (p = 0.045) mortality % 21-42 d than the high copper sulfate pentahydrate group, with control or antibiotic-fed group results intermediate. For the entire trial (0-42d), feed/gain ratios of high TBCC® or antibiotic-fed groups were significantly improved (p = 0.029) compared to control group, with the high copper sulfate pentahydrate group intermediate. The high TBCC® (150 mg copper/kg of feed) significantly lowered feed/gain ratio of meat ducks compared with control (10 mg copper from TBCC®/kg of feed) during the starter, grower and entire trial periods and reduced mortality % compared with high copper sulfate pentahydrate (150 mg copper from copper sulfate pentahydrate/kg of feed) during the grower period.

Key words: Copper, duck, performance, carcass, organ weights, tri-basic copper chloride