

# Growth response, blood characteristics and copper accumulation in organs of broilers fed on diets supplemented with organic and inorganic dietary copper sources

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## Abstract

1. A 56-d experiment was conducted to study the comparative influence of organic and inorganic dietary copper (Cu) sources on growth, blood characteristics and copper accumulation in organs of broilers.
2. A total of 480 Arbor-Acre unsexed broilers were fed on diets containing copper sulphate (CuSO<sub>4</sub>) or copper proteinate (Cu Pro) at concentrations of 50, 100 or 150 mg/kg of Cu supplementation. The birds were given a broiler starter diet from 1–28 d and a broiler finisher diet from 29–56 d which contained 30.8 mg/kg and 41.1 mg/kg basal copper concentration respectively. Growth performance, blood characteristics and Cu accumulation in organs of the broilers were measured.
3. At 28 d, Cu Pro-fed birds had improved feed conversion ratio compared with CuSO<sub>4</sub>. At 56 d, birds fed on Cu Pro diets had significantly greater body weight than CuSO<sub>4</sub>-fed birds. Birds fed on CuSO<sub>4</sub> supplemented diets had significantly better feed conversion efficiency. Feed consumptions for the two Cu sources were not significantly different. At no stage did the concentration of added Cu affect the productive traits measured.
4. Cu Pro supplementation increased haemoglobin concentration but reduced plasma triglyceride and plasma cholesterol. Plasma cholesterol decreased as Cu concentration increased.
5. There was a greater accumulation of Cu in the blood, heart, lung, liver and bone of broilers fed on Cu Pro than in those receiving CuSO<sub>4</sub>. The liver Cu concentration increased as dietary Cu concentration increased.
6. Cu Pro was more effective in promoting growth and reducing blood cholesterol, and was more bio-available in the organs of broilers.