



The Effect of KemTRACE® Chromium on Performance and Carcass Characteristics in Male Broilers^{1,2}

Introduction

International studies have shown that chromium supplementation can positively impact body weight, body weight gain and carcass yield by decreasing the biological impact of stress when compared to birds not fed chromium.^{2,3,4} Limited studies evaluated the effects of chromium propionate in North American broiler operations due to lack of regulatory approval. In June 2016, the Food and Drug Administration (FDA) Center for Veterinary Medicine (CVM) approved the food additive petition (FAP) for chromium propionate supplementation in broiler diets, thereby allowing the use of chromium propionate in broiler chicken feed. Shortly after, regulatory approval was received from the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA) for Mexico in 2016 and the Canadian Food Inspection Agency (CFIA) in 2018. The present study was conducted to evaluate the effect of KemTRACE® Chromium (chromium propionate) on body weight gain (BW), feed conversion ratio (FCR) and carcass characteristics of male broiler chickens.²

Materials and Methods

The trial was conducted in conjunction with University of Arkansas (Fayetteville, AR). One-day old male Cobb 500 broiler chicks were randomly assigned to one of three treatments (12 pens/trt; 12 broilers/pen): 1) no supplemented chromium (Control); 2) chromium propionate supplemented at 100 ppb (KT Cr 100: KemTRACE Chromium: Kemin Industries, Des Moines, IA); 3) chromium propionate supplemented at 200 ppb (KT Cr 200). The basal diet contained salinomycin sodium (60 g/t), BMD® (Zoetis: Parsippany, NJ) 50 g/t and phytase. Diets were made for 4 growth phases: starter (0 - 14d), grower (15 - 28d), finisher 1 (29 - 42d) and finisher 2 (43 - 60d).

The building temperature was maintained at the recommended temperature for the age of the birds until 28d. From 29 - 60d, broilers were subjected to cyclic heat stress by exposing them to 28 ± 2 °C (82.4 ± 3.6 °F) from 0800 to 1800 and 22 ± 2 °C (71.6 ± 3.6 °F) from 1800 to 0800.

Bird weights, feed consumption and feed conversion ratio (FCR) were recorded on 0d, 28d, 42d and 60d. At day 60, breast meat weights were collected from 6 birds per pen (72 birds/trt).

Results

Performance

There was no difference in body weight between the treatment groups at 28d and 42d; however, KT Cr 200 improved BW at 60d compared to control (0.20 kg difference; Figure 1).

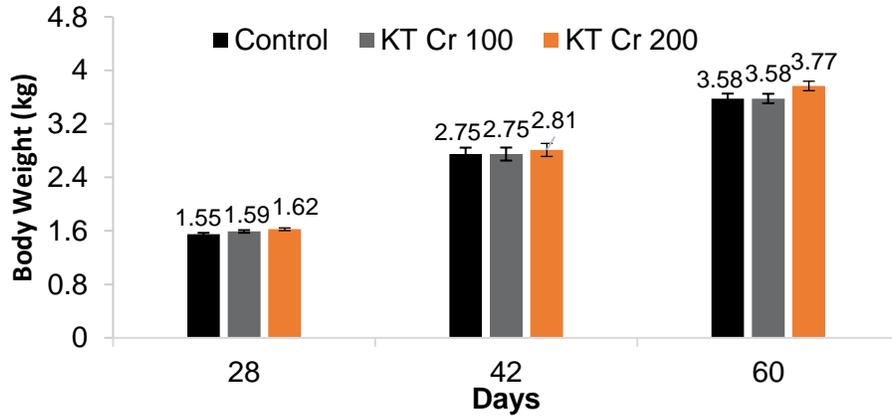


Figure 1. Effect of KemTRACE Chromium on body weight at 28d, 42d and 60d. Control = 0 ppb chromium added to the diet, KT Cr 100 = 100 ppb KemTRACE Chromium added to the diet, KT Cr 200 = 200 ppb KemTRACE Chromium added to the diet. Error bars represent the pooled SEM.

There was an improvement of 2 and 3 points, respectively when comparing KT Cr 100 and 200 to control at 28d (Figure 2). At 60d, KT Cr 100 and 200 showed a numerical improvement in FCR of 3 and 8 points, respectively, compared to control (Figure 2).

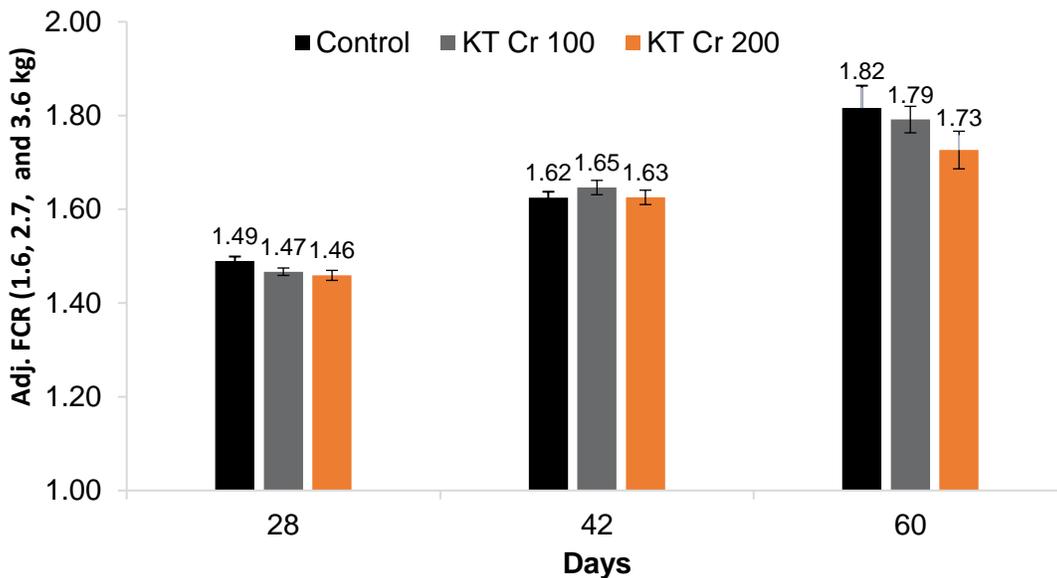


Figure 2. Effect of KemTRACE Chromium on FCR at 28d, 42d and 60d. Control = 0 ppb chromium added to the diet, KT Cr 100 = 100 ppb KemTRACE Chromium added to the diet, KT Cr 200 = 200 ppb KemTRACE Chromium added to the diet. Error bars represent SEM. Adj. FCR represents FCR adjusted to mortality and weight.

Carcass Characteristics

Adding KT Cr 200 ppb numerically improved breast meat yield by 0.25% compared to control (Figure 3).

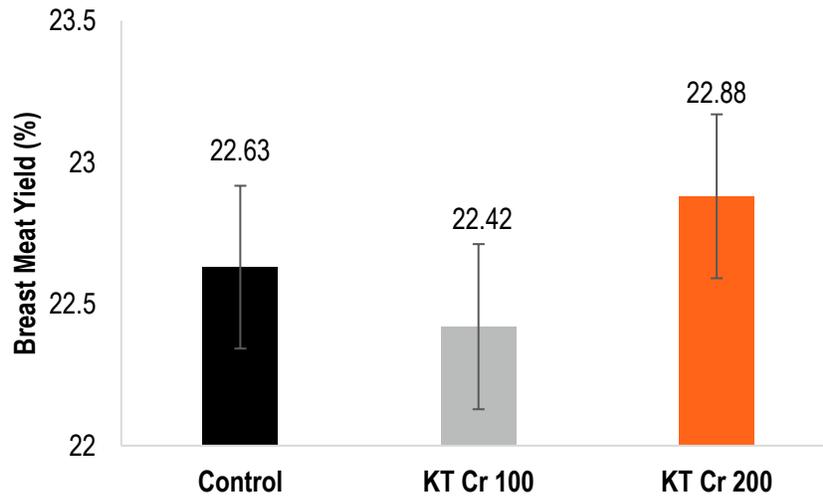


Figure 3. Effect of KemTRACE Chromium on breast meat yield. Control = 0 ppb chromium added to the diet, KT Cr 100 = 100 ppb KemTRACE Chromium added to the diet, KT Cr 200 = 200 ppb KemTRACE Chromium added to the diet. Error bars represent the pooled SEM.

Conclusion

Supplementing KemTRACE Chromium in the diet showed a positive effect on FCR and breast meat yield of birds subjected to cyclical heat stress. KemTRACE Chromium supplementation may alleviate the negative effects of stress on performance and carcass traits.

References

1. Kemin Internal Document, 16-00197.
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