



## Effects of KemTRACE® Chromium on performance and carcass characteristics in Ross 708 broilers<sup>1</sup>

### Abstract

The objective of this study was to evaluate the effects of KemTRACE® Chromium (KT Cr) on broiler performance and carcass characteristics. One-day old Ross 708 chicks were spray vaccinated and randomly assigned to one of 3 treatments (12 pens/trt; 20 broilers/pen): 1) no supplemented chromium (Control); 2) KT Cr supplemented at 100 ppb (KT Cr 100); 3) KT Cr supplemented at 200 ppb (KT Cr 200). Performance characteristics were collected on d 14, 28, 42 and 48. On d 48, broilers (96 broilers/trt) were harvested to determine carcass characteristics. The KT Cr 200 improved adjusted FCR by 6 points compared to control birds (1.66 vs 1.72;  $P = 0.057$ ). KT Cr 200 broilers had significantly increased carcass yield compared to control (80.05% vs 78.88%;  $P < 0.05$ ), and numerically increased breast meat yield (29.35% vs 28.79%). These data indicate that supplementation of chromium propionate at 200 ppb may improve both growth performance and yield.

### Introduction

Several broiler studies conducted outside the U.S. 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.<sup>2,3,4</sup> In June 2016, 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 for chromium propionate to be fed to broilers.<sup>5</sup> Until 2016, few studies evaluated the effects of chromium propionate on performance in U.S. broiler operations. The objectives of this study was to evaluate the effect of chromium propionate on performance and carcass characteristics in Ross 708 broiler chickens.

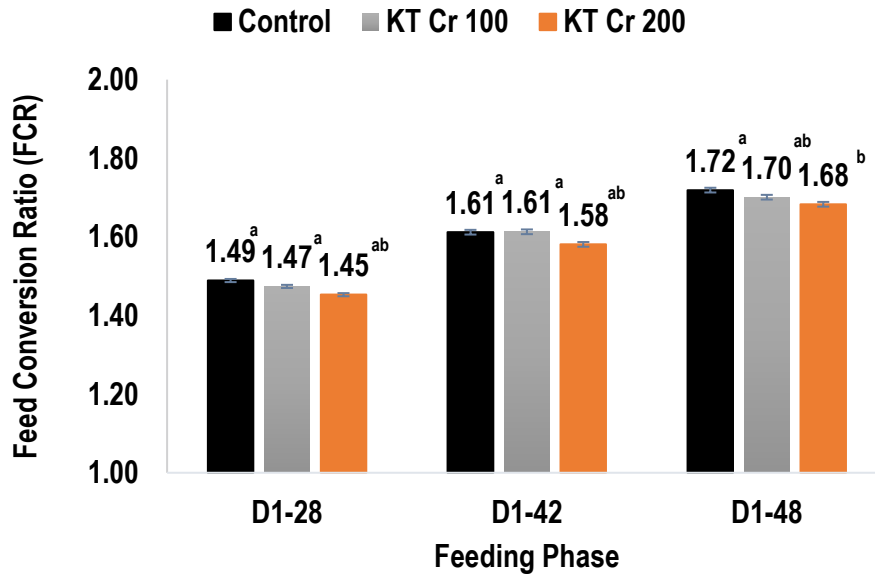
### Materials and Methods

The trial was conducted in conjunction with Texas A&M University (College Station, TX). One-day old, straight run Ross 708 broiler chicks ( $n = 720$ ) were spray vaccinated with a live coccidiosis vaccine (ADVENT®, NOVUS, St. Louis, MO) and randomly assigned to one of 3 treatments (12 pens/trt; 20 broilers/pen): 1) no supplemented chromium (Control); 2) KT Cr supplemented at 100 ppb (KT Cr: Kemin Industries, Des Moines, IA); 3) KT Cr supplemented at 200 ppb (KT Cr 200). The commercial type basal diets contained BMD® (Zoetis, Farsippany, NJ), but no ionophores. Diets were made for 4 growth phases and were fed *ad libitum* during the appropriate phase: Starter d 0-14; Grower d 14-28; Finisher d 28-42; and Withdrawal d 42-48.

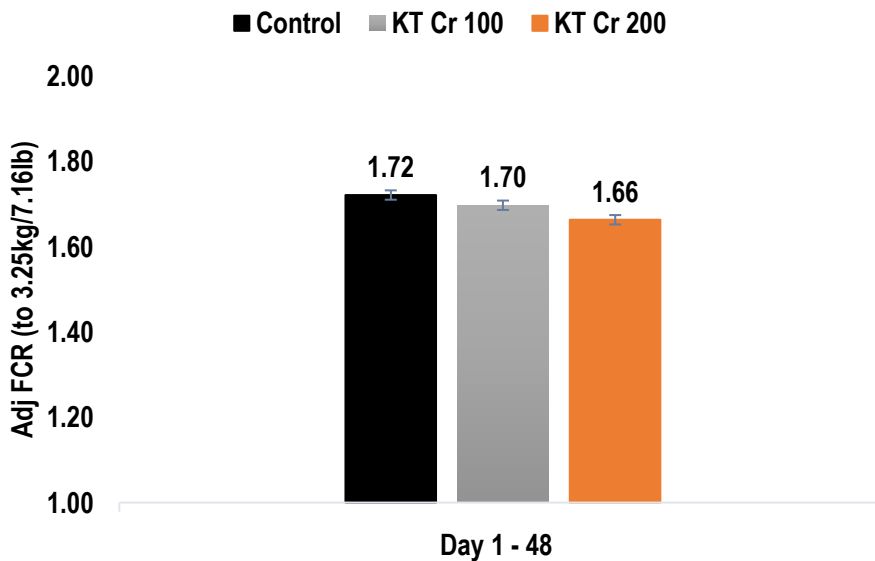
Performance parameters were recorded at d14, 28, 42 and termination (d 48). At the end of the trial, broilers (96 broilers/trt) were harvested following an 8 hour feed withdrawal to determine carcass and breast meat yields.

### Results

The inclusion of KT Cr 200 improved FCR throughout the entire study compared to the control (Figure 1). Chromium supplemented at KT Cr 100 ppb not illicit a significant response. However, KT Cr 100 tended to improve FCR compared to the control from d 1-48 (1.70 vs 1.72, respectively;  $P = 0.059$ ). Broilers fed KT Cr 200 had improved adjusted FCR compared to the control and KT Cr 100 (1.66 vs 1.70 vs 1.72, respectively;  $P = 0.057$ ; Figure 2).

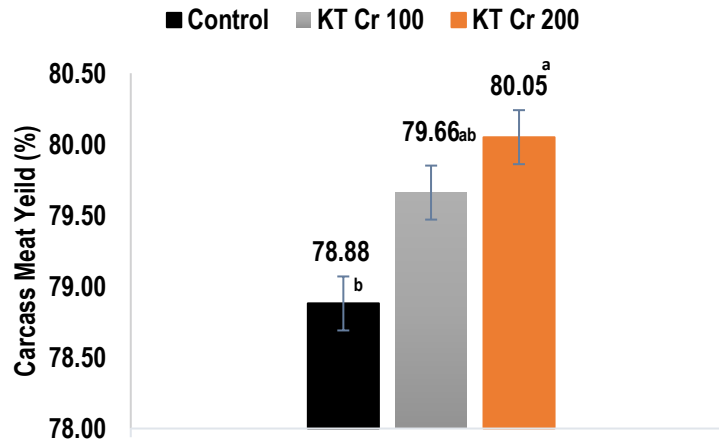


**Figure 1.** Effects of KemTRACE® Chromium on feed conversion rate of broiler Ross 708 chicks from d1-48. Control = 0 ppb chromium added to the diet, KT Cr 100 = 100 ppb KemTRACE Chromium added to the diet, KT Cr 200 = 200 ppb KemTRACE Chromium added to the diet. Superscripts represent significant differences due to treatment,  $P < 0.05$ , d1-48  $P = 0.059$ . Error bars represent the pooled SEM.

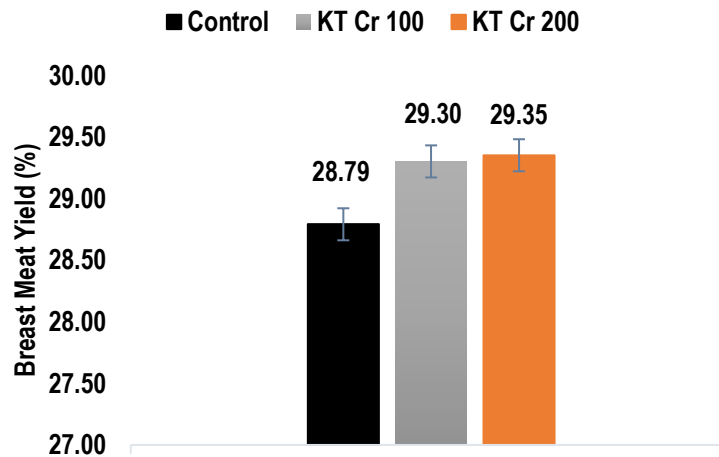


**Figure 2.** Effects of KemTRACE® Chromium on adjusted feed conversion rate of broiler Ross 708 chicks from d1-48. Control = 0 ppb chromium added to the diet, KT Cr 100 = 100 ppb KemTRACE Chromium added to the diet, KT Cr 200 = 200 ppb KemTRACE Chromium added to the diet.  $P = 0.057$ . Error bars represent the pooled SEM.

KT Cr 200 significantly increased average carcass yield compared to the control (difference of 1.17%;  $P = 0.018$ ; Figure 3). There was a 0.5% numerical increase in breast yield with KT Cr 200 compared to the control ( $P = 0.185$ ; Figure 4).



**Figure 3.** Effects of KemTRACE® chromium on carcass yield of broiler Ross 708 chicks on d48. 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.  $P = 0.018$ . Superscripts represent significant differences due to treatment,  $P < 0.05$ . Error bars represent the pooled SEM.



**Figure 4.** Effects of KemTRACE® Chromium on breast yield of broiler Ross 708 chicks on d48. 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.  $P = 0.185$ . Error bars represent the pooled SEM.

## Conclusion

The addition of KemTRACE® Chromium improved adjusted FCR in addition to carcass and breast yield compared to non-chromium supplemented broilers.

## References

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2. Toghyani M., M. Shivazad, A.A. Gheisari and S.H. Zarkesh (2006). Performance, carcass traits and hematological parameters of heat-stressed broiler chicks in response to dietary levels of chromium picolinate. *International Journal of Poultry Science* 5 (1): 65-69.
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5. 21 CFR 573.304, Chromium Propionate.