

Response of Two Broiler Strains to Different Dietary Levels of Vitamin C During Summer

MOHAMED ELAMIN AHMED¹, MAZEN NASSIR ALI NASSIR² AND OMAR ABDUL MAGEED SALLAM²

¹Department of Animal Production, Faculty of Agricultural Technology and Fish Sciences, Alneelain University, P.O. Box 12702, Postal Code 11121, Khartoum, Sudan.

²Department of Animal Production, Nassir College for Agricultural Sciences, University of Aden, Yemen

INTRODUCTION

Growth performance of broiler chickens is negatively affected by severe heat stress. Stressed poultry showed significant decrease in plasma concentrations of antioxidant vitamins and minerals (Sahin *et al.*, 2002). Antioxidant supplementation, especially vitamins C can be used to attenuate the negative impacts of environmental stress. Several researchers have reported beneficial effects of vitamin C given either in diets and/ or in drinking water on growth rate of the birds. Therefore, the objectives of the current study were to investigating the effects of vitamin C levels on growth performance, carcass characteristic and some physiological responses of two broilers strains raised under hot summer.

MATERIALS AND METHODS

This experiment was conducted to investigate the responses of two broiler strains Ross 308 and Cobb 500 to 4 levels of vitamin C (0,150, 200 and 250 mg per 1 kg feed. One hundred and twenty - one day old chicks of each strain were used in this study. The experiment was extended for 6 weeks, during which starter feeds were fed for the first 3 weeks and finisher feeds were given then after. The experiment was conducted in an open- sided house at khanfar area, Abyan district (Yemen). Birds were randomly assigned to the treatments with 3 replicates and 10 birds each. Weekly growth performance parameters were measured. A split plot design was used in which 2 main plots (strains) were fed the 4 levels of vitamin C as sub plots. Data were analyzed by the general linear model (GLM) procedure. Duncan's multiple range test was used to compare the treatment means.

RESULTS AND DISCUSSION

The effect of strain and vitamin C mg/Kg feed on overall performance of broiler chicks is given in Table 1. Cobb strain depicted significantly ($P \leq 0.05$) improved live body weight, feed intake, body weight gain and FCR compared to Ross 308. These results are in agreement with that of Hossain *et al.* (2011) who reported higher live weight and body weight gain for cobb-500. On the other hand, feed intake was not significantly ($P \geq 0.05$) affected by different levels of vitamin C. This result is agreed with Onu (2009) who confirmed that supplemental vitamin C did not induce significant effect on feed intake. However, with the increasing levels of vitamin C, live body weight, FCR, livability% and production yield kg/m² were significantly ($p \leq 0.05$) improved.

Similarly, Sahin *et al.* (2002) reported that supplemental vitamin C increased live weight and improved feed efficiency in heat-stressed birds.

TABLE 2. THE EFFECT OF STRAIN AND VITAMIN C ON OVERALL PERFORMANCE OF BROILER.

Treatments		Production Parameters			
Strain	Vitamin C levels mg/L	Live body wt (g/bird)	Feed intake (g/bird)	Body wt (g/bird)	FCR
Ross 308		1382.7 ^b	2758.055 ^b	1266.1 ^b	2.17 ^a
Cobb		1480.2 ^a	2887.6 ^a	1362.7 ^a	2.12 ^b
	0	1387.6 ^b	2842.9	1270.6 ^b	2.23 ^a
	150	1410.6 ^{ab}	2806.6	1293.6 ^{ab}	2.17 ^b
	200	1456.8 ^a	2815.1	1339.7 ^a	2.10 ^c
	250	1470.9 ^a	2826.6	1353.9 ^a	2.09 ^c

Values are means of 3 replicates per treatment (10 bird\replicate).

^{a b c} Means not sharing common superscript letters are significantly ($P \leq 0.05$) different. SEM: Standard error of the means.

CONCLUSION

This study concludes that vitamin C supplementation at 200-250 mg/Kg diet improved performance and alleviated oxidative damage in stressed broiler.

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