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Efficacy of Vitamins A, C and E on the Growth Performance of Broiler Chickens Subjected to Heat Stress

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Abstract : The increase in environmental temperatures brought about by climate change impacts negatively the growth performance of broilers that may be solved by manipulating the diet of the animals. Hence, this study was conducted to evaluate the effects of different vitamin supplements on the growth performance of broiler chickens subjected to ambient (31°C) and heat stress (34°C) temperatures. The treatments were: I- Control (no vitamin supplement), II- Vitamin A (4.5 mg/kg of feed), III- Vitamin C (250 mg/kg of feed), IV- Vitamin E (250 mg/kg of feed), V- Vitamin C and E (250 mg/kg of feed and 250 mg/kg of feed), VI- Vitamin A and E (4.5 mg/kg of feed and 250 mg/kg of feed), VII- Vitamin A and C (4.5 mg/kg of feed and 250 mg/kg of feed), and VIII- Vitamin A, C and E (4.5 mg/kg of feed, 250 mg/kg of feed and 250 mg/kg of feed). The birds (n=240) were distributed randomly into eight treatments replicated three times, with each replicates having five birds. Ambient temperature was maintained using a 25 watts bulb for every 20 birds, while heat stress condition was sustained at 34°C for about 9 hours daily by using a 50 watts bulb per 5 birds. The interaction of vitamin supplements and temperatures did not significantly ($P>0.05$) affected body weight, average daily gain, feed consumption and feed conversion efficiency throughout the growing period. Similarly, supplementation of different vitamins did not improve ($P>0.05$) the overall production performance of birds throughout the rearing period. Birds raised in heat stress (34°C) condition had significantly lower (($P<0.05$) body weight, average daily gain, and feed consumption compared to birds raised in ambient temperature at weeks 3, 4 and 5 of rearing. Supplementation of vitamins A, C, and E in the diet of broilers did not alleviate the effect of heat stress in the growth performance of broilers.

Keywords : broiler growth performance, heat stress, vitamin supplementation, vitamin A, vitamin C, vitamin E
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