The effects of different levels *Chlorella microalgae*on trace minerals concentrations of laying hens reared under heat stress

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Abstract

Introduction: Heat stress (HS) is involved in the poultry production industry, particularly in warmth regions of the world since of the resulting weak growth performance, immunosuppression and high mortality rate. Chlorella is unicellular green algae that contain essential amino acids, protein, minerals, vitamins, dietary fiber, and a great range of antioxidants, bioactive substances and chlorophylls. This study was conducted to investigate the effect of different levels supplementation *Chlorella microalgae* on serum minerals content of laying hens reared under heat stress condition (27.5-36.7˚C; variable).

Methods:A total number of 378 (40 weeks age, with mean body weight of 1390±120 g) were randomly allocated to six treatments with seven replicates. The birds were randomly assigned to 6 treatments (C, T1, T2, T3, T4 and T5) with 7 replicate cages of 9 birds. *Chlorella microalgae* at the rates of 100, 200, 300, 400 and 500 ppm with water offered to groups T1, T2, T3, T4 and T5 respectively while group C served as control. At the end of experiment blood were taken for measuring serum minerals analysis (Zinc, Cobalt, Iodine, Copper, Iron, Manganese and Selenium).

Results: The results of this experiment showed that the supplementing of *Chlorella microalgae* have not significantly effect on concentrations of Zinc, Cobalt, Iodine and Copper ((P>0.05). *Chlorella microalgae* at rates 300-500 ppm caused a marked (P<0.05) increase in the serum content of manganese or Iron and selenium but other minerals were not statistically different among treatments.

Conclusion: Overall form the results of the present experiment it can be concluded that supplemental of *Chlorella microalgae*at high rate (500 ppm) was beneficial on blood parameters of laying hens reared under heat stress.

Keywords: Chlorella microalgae; Heat stress; Trace minerals; Laying hens