

EVALUATION OF TRIIODOTHYRONINE AND CORTICOSTERONE HORMONE IN EARLY THERMAL CONDITIONED CHICKEN STRAINS UNDER THE THERMAL CONDITIONING AND THERMAL CHALLENGE

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To study the stress evaluating hormones such as Triiodothyronine and corticosterone in early thermal conditioned birds at 0-14 days of age. Utilized four different chicken strains such as Aseel, Nandanam chicken-4, Nandanam broiler-3 and Naked neck. Each strains have ninety chicks were randomly assigned as three treatment groups with three replicates. Treatment one (T_1) served as the control group reared under ambient temperature for a period of 12 weeks, Treatment two (T_2) were exposed to thermal stress at 37°C for 4 hours and Treatment three (T_3) were exposed to thermal stress at 39°C for 2 hours. Second thermal conditioning (29-42 days of age) was applied in same treatment groups. Apart from the exposure period birds reared under ambient temperature. At the end of the trail 84th day, control birds divided into two groups (i.e.) one group as unexposed control and another one for sudden heat exposure. Except unexposed control group all the treatment birds was challenged for heat stress at 38±1°C for 6 hours. Serum samples were collected after the second thermal conditioning and thermal challenge. Corticosterone was determined by using EIA kit (Bioassay Technology Laboratory) and T_3 was determined by using EIA kit (BeneSphera, Avantor Ltd.) assay performed according to the manufacturer instructions. Triiodothyronine was observed that, at second thermal conditioning both T_2 and T_3 groups had significantly ($P<0.01$) decreased irrespective of strains. During thermal challenge, the sudden exposure of unconditioned birds had a significantly ($P<0.01$) higher when compared to thermal conditioned birds. Among the strains, T_2 Naked neck and T_3 Nandanam broiler-3 had a significant ($P<0.01$) increased in Triiodothyronine level when compared with other strains. In Corticosterone, at second thermal conditioning both T_2 and T_3 had significantly ($P<0.01$) increased irrespective of strains. At thermal challenge, the sudden exposure of unconditioned birds had significantly ($P<0.01$) higher corticosterone level compared to thermal conditioned birds. Among the preconditioned birds there was no significant difference observed. The result clearly shows better heat tolerance in thermal conditioned birds.