The effects of the hot, humid tropical climate and early age feed restriction on stress and fear responses, and performance in broiler chickens

ABSTRACT

The present study was conducted to determine the effects of two types of housing systems and early age feed restriction on stress and fear reactions, and performance in broiler chickens raised in a hot, humid tropical climate. On day 1, chicks were housed either in windowless environmentally controlled chambers (temperature was set at 32°C on day 1 and gradually reduced to 23°C by day 21) or in conventional open-sided houses (OH) with cyclic temperatures (minimum, 24°C; maximum, 34°C). An equal number of chicks from each housing system was subjected to either ad libitum feeding (AL) or 60% feed restriction on day 4, 5 and 6 (FR). The CH birds showed greater weight gain, higher feed consumption and better feed conversion ratios (FCR) than their OH counterparts. Feeding regimen had negligible effect on overall performance. Neither housing nor feeding regimen had a significant ($p<0.05$) effect on mortality rate. Although the CH birds were less stressed, as measured by plasma corticosterone concentration (CORT), than those of OH, the former showed longer TI duration suggesting higher magnitude of underlying fearfulness. A significant ($p<0.05$) effect of housing on heterophil/lymphocyte ratios was only noted among the AL birds where the CH birds had higher values than OH. Collectively, these results suggest that although OH birds had poorer performance and higher level of stress than CH, the former were less fearful. Although FR had negligible effect on growth performance, the regimen alleviated both stress and fear reactions in broilers.

Keyword: Broiler chickens, Feed restriction, Hot, humid climate