

The effect of different degrees of feed restriction on heat shock protein 70, acute phase proteins, and other blood parameters in female broiler breeders

ABSTRACT

The aim of the current study was to determine the physiological response to feed restriction in female broiler breeders using a range of conventional and novel indicators. One hundred female breeders were subjected to one of five feeding regimens from d 28 to 42 as follows (i) ad libitum feeding (AL), (ii-v) 75, 60, 45, and 30% of ad libitum feed intake. Blood heterophil to lymphocyte ratio (HLR), and plasma circulating corticosterone (CORT), ghrelin (GHR), serotonin (5-HT), and dopamine (DA) and serum acute phase proteins (APP) concentrations together with brain heat shock protein (HSP) 70 level were measured. The results showed a significant effect of feed restriction on blood HLR and plasma CORT, GHR, 5-HT, DA, and brain HSP 70 levels. However, feed restriction had no effect on serum levels of APP of alpha-1 acid glycoprotein, ovotransferin, and ceruloplasmin. Serum levels of 5-HT and GHR varied curvilinearly with the feed restriction level. The relationship between brain HSP 70 and level of feed restriction was negligible. However, significant linear relationships between HLR, CORT, DA, and the level of feed restriction were noted. Thus, these 3 parameters appear to represent a straight forward relation with severity of feed restriction.

Keyword: Acute phase proteins; Broiler breeder; Corticosterone; Feed restriction; Heat shock protein 70