

Acute phase proteins, interleukin 6, and heat shock protein 70 in broiler chickens administered with corticosterone

ABSTRACT

An experiment was conducted to determine the effect of corticosterone (CORT) administration on serum ovotransferrin (OVT), α 1-acid glycoprotein (AGP), ceruloplasmin (CPN), and IL-6 concentrations, and brain heat shock protein (HSP) 70 expression in broiler chickens. From 14 to 20 d of age, equal numbers of birds were subjected to either (i) daily intramuscular injection with CORT in ethanol:saline (1:1, vol/vol) at 6 mg/kg of BW, or (ii) daily intramuscular injection with 0.5 mL ethanol:saline (1:1, vol/vol; control). Blood samples were collected before CORT treatment (14 d old), 3 and 7 d after CORT injections, and 4 d after cessation of CORT administration for determination of serum levels of CORT, OVT, AGP, CPN, and IL-6. Brain samples (whole cerebrum) were collected to measure HSP 70 density. Although CORT administration significantly increased feed intake, weight gain was significantly depressed. Administration of CORT also increased CORT, OVT, CPN, AGP, IL-6, and HSP 70 expression. Four days following cessation of CORT administration, OVT declined to the basal level but not CPN and AGP. In conclusion, an elevation in CORT can induce an acute-phase response and HSP 70 expression. Thus, APP and HSP 70 may be of value as indicators of stress in poultry.

Keyword: Acute phase protein; Interleukin 6; Heat shock protein 70; Corticosterone; Broiler