

Acute phase proteins response to feed deprivation in broiler chickens

ABSTRACT

Feed deprivation in poultry farming imposes some degree of stress to the birds, and adversely affects their well-being. Serum levels of acute phase proteins (APP) are potential physiological indicators of stress attributed to feed deprivation. However, it has not been determined how long it takes for a measurable APP response to stressors to occur in avian species. An experiment was designed to delineate the APP and circulating levels of corticosterone responses in commercial broiler chickens to feed deprivation for 30 h. It was hypothesized that feed deprivation would elicit both APP and corticosterone (CORT) reactions within 30 h that is probably associated with stress of hunger. Twenty-one day old birds were subjected to one of 5 feed deprivation periods: 0 (ad libitum, AL), 6, 12, 18, 24, and 30 h. Upon completion of the deprivation period, blood samples were collected to determine serum CORT, ovotransferrin (OVT), α 1-acid glycoprotein (AGP), and ceruloplasmin (CP) concentrations. Results showed that feed deprivation for 24 h or more caused a marked elevation in CORT ($P = 0.002$ and $P < 0.0001$, respectively) when compared to AL. However, increases in AGP ($P = 0.0005$), CP ($P = 0.0002$), and OVT ($P = 0.0003$) were only noted following 30 h of feed deprivation. It is concluded that elicitation of AGP, CP, and OVT response may represent a more chronic stressful condition than CORT response in assessing the well-being of broiler chickens.

Keyword: Feed deprivation; Acute phase proteins; Corticosterone; Broiler chickens