Changes in heat shock protein 70, blood parameters, and fear-related behavior in broiler chickens as affected by pleasant and unpleasant human contact

ABSTRACT

An experiment was conducted to determine the effects of combining both pleasant and unpleasant contacts with human beings on physiology and behavior of broiler chickens. Birds were subjected to the following treatments: (i) received no physical or visual contact with humans (control); (ii) from d 1 to 28, chicks were individually stroked gently for 30 s once daily (PL); (iii) from d 1 to 28, chicks were picked up individually, suspended by both legs, exposed to recorded noise, and swung gently for 15 s once daily (UNPL); (iv) from d 1 to 14 and from d 15 to 28, chicks were subjected to PL and UNPL, respectively (PL-UNPL); and (v) from d 1 to 14 and from d 15 to 28, chicks were subjected to UNPL and PL, respectively (UNPL-PL). On d 42, birds from each treatment group were road-transported for 3 h. Heat shock protein (hsp) 70 expression, plasma levels of corticosterone, serum creatine kinase concentration, heterophil/lymphocyte ratios (HLR), and tonic immobility duration were determined pre- and posttransit. There were significant ($P < 0.05$) duration of transportation × human contact treatment interactions for HLR and hsp 70 density. Following transit, the PL chicks had significantly ($P < 0.05$) lower HLR and greater hsp 70 density than the other groups. The corticosterone of PL and UNPL chicks were lower than their control, PL-UNPL, and UNPL-PL counterparts. The PL and PL-UNPL treatments were effective in shortening tonic immobility duration significantly ($P < 0.05$). Except for UNPL-PL, the serum creatine kinase activity of PL was significantly lower than the other groups. In conclusion, subjecting birds to pleasant human contact reduced stress and fear reactions to transportation by enhancing the ability to express hsp 70 in the brain. Unpleasant human contact had adverse effect on the birdsô response to transportation. Early age pleasant experience with humans failed to negate the adverse effects of subsequent unpleasant contact.

Keyword: Broiler chicken; Fear; Heat shock protein 70; Human contact; Stress