

Effect of maternal corticosterone on some behavioral measures in broilers

S. ÖZKAN, S. YALÇIN and E. BABACANOGLU

Ege University, Agricultural Faculty, Animal Science Department, Turkey

E-mail: sezen.ozkan@ege.edu.tr

In avian species, maternal hormones e.g. corticosterone in yolk, could affect behaviour as well as individual performance of progeny. Because inappropriate levels of sociality could result in social stress in poultry, it is an important issue to assess welfare. T-maze escape performance of young broiler chicks has been shown to be associated with sociality (reinstatement visual contact with their conspecifics) and with growth rate. Changes in social reinstatement behaviour in quails are also associated with adrenocorticoids. Therefore, in the present study chicks from breeder hens fed corticosterone were used to study the effect of maternal corticosterone on T-maze escape performance, social reinstatement behaviours in runway and open field responses. T-maze performance was measured on day 2 in 100 chicks from hens given corticosterone (Cort) and 80 from Control (Cont) groups. Body weights of broilers were recorded on day 2 and 42 days of age. Birds were classified according to their latencies to exit T-maze by high (latency less than 40 s), moderate (latency 40 to 90 s), and low (failed to escape the maze). Runway on day 12 and open field tests on day 21 were conducted using 20 chicks per treatment/test. Chi square analysis showed that percentage of high (20%) and moderate (22%) performers in T-maze was significantly higher in Cort group than Cont (8.75% for high and moderate) ($P < 0.05$). T-maze performance was not associated with body weight of broilers at either age. Maternal corticosterone also increased the number of birds which quickly left the start box in T-maze test as compared with the Cont ($P < 0.05$). This result might be referred to lower fearfulness in chicks from Cort. Although open field responses of broilers were not different between treatments, slightly reduced latency for first movement in broilers from Cort was observed. Runway test results showed that there was no significant effect of maternal corticosterone on social reinstatement behaviour. As a result, maternal corticosterone tended to increase the number of chicks that escaped from the T-maze. However, further research is needed to understand the underlying mechanism.

Keywords: broilers, maternal corticosteron, behavioral tests