



Age-related behavioral activity and welfare status in broilers with different growth profiles

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Abstract

This study was designed to determine the age-related behavioral patterns exhibited by different broiler genotypes with different growth profiles (A1, ANADOLU-T dam line: 61.6 g/day; A2, ANADOLU-T dam line: 59.2 g/day; B2, ANADOLU-T sire line: 70.1 g/day; ROSS-308, hybrid: 75.2 g/day) throughout the growth period (2-6 weeks) and to reveal the phenotypic correlations between behavioral and welfare traits (foot-pad dermatitis: FPD, hock burn: HB, breast burn: BB, finger crookedness: FC, valgus-varus deformity: VVD). The BW was higher in ROSS-308 at all ages, reaching 2587 g, 2486 g, 2944 g, and 3158 g at 6 weeks for the A1, A2, B2, and ROSS-308 genotype, respectively ($P<0.001$). While the effect of genotype remained limited on main time budget components such as resting ($P=0.2067$) and locomotion ($P=0.5996$), significant differences were observed in standing ($P<0.001$), drinking ($P<0.001$), and foraging ($P=0.0209$). As age progressed, active behaviors decreased across all genotypes, while inactive behaviors reached levels of 85-90% by the 6th week. Time of day influenced behavioral patterns; inactivity increased during evening hours, whereas comfort and active behaviors decreased. Regarding welfare status, distinct differences were observed among genotypes in the prevalence of FPD ($P=0.0013$), HB ($P=0.0141$), and BB ($P<0.001$). Contact dermatitis scores were higher in the ROSS308 and B2 genotypes (HB Score 1: 80.0% and 75.5%, respectively). Correlation analyses revealed significant negative weekly relationships between active behaviors and both HB and total welfare scores, while positive relationships were found with inactive behaviors (as scores increased, activity levels decreased). In conclusion, although the behavioral repertoires of the broiler genotypes exhibited similar trends with advancing age, high body weight, and genetic profile were found to be decisive risk factors for welfare indicators such as contact dermatitis rather than behavioral activity.

Key Words: Broiler chicken, genotype, behavioral traits, body weight, welfare, body defects

