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Fattening and Carcass Traits of Broiler Genotypes with and without Feathers under Hot Conditions

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Abstract

Heat stress due to high ambient temperature hampers broiler production in the tropics and subtropics leading to depression in feed consumption and growth rates of birds and high mortality while at the same time reducing breast meat yield and quality. Adapting the environment to the demands of fast-growing broilers by means of high-cost cooling and ventilation system is feasible, but in many cases is neither economical nor affordable by farmers in developing countries where electric power and water are not in constant supply. The problem of heat stress on broilers and the non-sustainable management practices used in combating it could be alleviated by introducing the scaleless (sc) gene. This major gene improves the adaptation to hot climates by eliminating feathers. Previous studies on the sc gene indicated that the relative weight of the breast was increased in featherless birds. An experiment was set up involving 200 featherless chicks and 200 feathered sibs who were reared under hot conditions in two rooms (average temperature 29 to 33°C) divided into pens by genotype. Fattening and carcass traits considered were live and slaughter weights, and mortality. The studied breast meat quality traits post mortem (PM) were: colour (Lightness (L*) and redness (a*)), drip loss, thaw loss and drip-thaw loss. The quality traits were studied on 56 individuals from each genotype. Results confirmed statistically significant improvements in breast meat quantity and quality of featherless birds under hot conditions: breast meat yield was around 50% higher, mortality due to a heat wave of 38°C on day 45 was lower (2% vs 42%), breast colour at 24h and 72h PM was better with lower L* values (52.8 vs 54.4, 53.2 vs 55.6, respectively) and higher a* values (3.2 vs 2.5, 4.2 vs 3.2), lower drip loss on day 4 PM (1.9% vs 2.6%), lower thaw losses (2.3% vs 3.4%) and drip-thaw losses (4.1 vs 5.9) on day 7 PM.

Keywords: Featherless broiler, heat stress, hot tropics, meat quality, meat yield