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Factors affecting growth performance, carcass quality and the occurrence of white striping and wooden breasts in broilers

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The present study aimed at evaluating whether growth performance, carcass and meat quality, and the occurrence of white striping and wooden breast in broiler chickens could be affected by genotype (standard *vs.* high breast yield hybrid, S *vs.* H), sex, and feeding regime (*ad libitum vs.* restricted rate, 80% from 13 to 21 d of age). 768 one-day-old chicks were housed in 32 pens and slaughtered at 46 d of age. The S broilers showed higher final live weight (3,270 *vs.* 3,139 g; P<0.001) and lower feed conversion (1.56 *vs.* 1.61; P<0.001) compared to the H genotype. The S broilers exhibited higher thigh yield (18.3 *vs.* 17.7%; P<0.01) and pHu (5.89 *vs.* 5.85; P<0.05), lower lightness (L*, 45.3 *vs.* 46.2; P<0.05), and higher thawing losses (10.5 *vs.* 9.4%; P<0.05) of the P. major muscle compared to the H genotype. Males showed higher (P<0.001) final live weight (3,492 *vs.* 2,845 g), daily weight gain (77.3 *vs.* 62.8 g/d) and feed intake (119 *vs.* 102 g/d), and lower feed conversion (1.54 *vs.* 1.63) compared to females, besides heavier carcasses, higher dressing percentage and hind leg yield at slaughter. The breast had higher pHu (5.89 *vs.* 5.85; P<0.01) and was less yellow (b*, 13.4 *vs.* 14.2; P<0.05) in males than females. Feed restriction impaired final live weight (3,142 *vs.* 3,194 kg; P<0.01), despite the compensatory growth (95.4 *vs.* 91.5 g/d; P<0.001) measured during the second period (22 to 46 d) in the previously restricted chickens compared to those always fed *ad libitum*, and improved feed conversion (1.57 *vs.* 1.60; P<0.01). At slaughter, the restricted broilers showed lower carcass weight, dressing percentage (73.5 *vs.* 73.9%; P<0.05), breast yield (39.5 *vs.* 40.6%; P<0.10), and higher thigh yield (18.3 *vs.* 17.7%; P<0.05) compared to the birds always fed *ad libitum*, besides higher breast pHu (5.89 *vs.* 5.85; P<0.01); otherwise the restricted birds tended to have a higher proportion of white-striped breasts compared to the birds fed *ad libitum* (79.5 *vs.* 69.5%; P<0.10). Wooden breast occurrence averaged 12.2% and was significantly lower in females than males (8.0 *vs.* 16.3%; P<0.05). In conclusion, genotype had a moderate effect on growth performance as well as carcass and meat quality but it did not modify the occurrence of breast muscle abnormalities, whereas gender and feed restriction affected growth performance and abnormality incidence.

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