

# Productive responses of broilers fed diets with different feed compositions during heat stress

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Heat stress can adversely affect broiler performance and meat quality. Dietary composition could potentially mitigate those negative effects. Diet-induced thermogenesis is mainly determined by the protein fraction and increasing dietary fat can stimulate nutrient absorption and provide extra metabolizable energy (ME). Therefore, we studied the effects of reduced protein and/or increased dietary fat on performance and meat quality during heat stress. In total, 1920 male Ross 308 broilers were divided in 8 treatments (8 replicates/treatment, 30 birds/replicate) according to a 2 x 4 factorial design, i.e., birds were kept in thermoneutral conditions or subjected to heat stress ( $32^{\circ}\text{C} \pm 2^{\circ}\text{C}$  and RH 55–65% for 6h daily, d29-43) and 4 finisher diets (d26-39) were formulated. The diets were: control, standard broiler diet (ME 12.2 MJ/kg, 18.2% crude protein (CP) and 8.0% crude fat (CF)), low CP diet (LCP) (CP 17.3%), low CP and high CF diet (LCPHCF) (ME 12.6 MJ/kg; CP 17.3%; CF 9.7 %), and high CF diet (HCF) (ME 12.5 MJ/kg; CP 18.2%; CF 9.6%). Statistical analysis was done with RStudio using a generalized linear mixed model. Heat stress had negative effects on performance: growth ( $p < 0.01$ ), feed intake ( $p < 0.01$ ), final weight ( $p < 0.01$ ), feed conversion ( $p < 0.01$ ), and mortality ( $p < 0.01$ ). Interestingly, broilers in heat stress had significantly higher slaughter yield ( $p < 0.01$ ), upper thigh% ( $p < 0.01$ ), drumstick% ( $p < 0.01$ ), and breast muscle% ( $p < 0.01$ ). The different feed compositions did not significantly improve broilers' performance during heat stress in this experimental design. However, the amount of protein reduction and lower feed intake during heat stress are not to be excluded as reason for this lack of effect. q