

Body composition of pork carcasses slaughtered at the same age as influenced by high ambient temperature

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Introduction: The climate change is provoking more heat waves in certain temperate areas. High ambient temperature is also an important issue in the great farming tropical areas. Pigs reduce their feeding consumption as an adaptive response to reduce heat production (Renaudeau et al., 2011). The study objective was to evaluate the effects of elevated temperature on carcass composition and the relative importance of each primal cut of pigs slaughtered at the same age.

Material and Methods: A sample of 48 females was reared for 60 days in two groups: one at thermoneutrality (TN, 18-24°C) and the other in hot conditions (HS, 28-34°C). It was divided in 17 blocks of 2 or 4 sisters. Ad libitum access to a standard growing-finishing feed was provided. All pigs were slaughtered at 140 days. After chilling overnight half-carcasses were scanned by X-ray tomography with the same parameters as used by Daumas and Monziols (2011). Muscle, fat and bone weights were firstly calculated according to Daumas and Monziols (2017). Secondly, they were corrected by assuming a rind content of 4% and by deducing 50% of this quantity from the initial muscle weight and 50% from the initial fat weight. Head and feet were not scanned and considered as bone. Half-carcasses were then cut according to a standard commercial procedure in order to measure backfat weight and the proportion of each primal cut into the carcass. Data were analysed by using a mixed model including temperature as fixed effect and block as random effect.

Results: HS decreased feed intake ($P < 0.01$), resulting in lower growth ($P < 0.01$), and final body weight (96.9 vs. 104.8 kg; $P < 0.001$). The decrease of 5.4 kg in carcass weight (73.8 vs. 79.2 kg; $P < 0.001$) affected the three main tissues. It was divided between tissues as follows: -2.3 kg of muscle (46.1 vs. 48.4 kg; $P < 0.01$), -2.1 kg of fat (11.9 vs. 14.1 kg; $P < 0.01$), and -0.7 kg of bone (12.7 vs. 13.4 kg; $P < 0.001$). This change in distribution resulted in a decreased fat content (-1.5 percent point; $P < 0.05$), and an increased muscle (+1.2 percent point; $P = 0.05$) and bone (+0.3 percent point; $P = 0.09$) contents. Carcass fat content, backfat weight, and rump fat thickness decreased ($P < 0.05$) by about 10, 12 and 18%, respectively. Ham percentage increased by +0.9% ($P < 0.001$), but the loin percentage decreased by -0.7% ($P < 0.05$); this divergent trend between two lean cuts might be associated with a change in conformation as seen in shorter HS carcasses (-2.4 cm; $P < 0.01$).

Conclusion: In summary, heat stress decreased live, carcass and cuts weights at the same age. The lower fatness, counterbalanced by a higher muscularity and bone content, could be explained by feed restriction.

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Literature:

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