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CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

EQUATION TO PREDICT DRIP LOSS IN PORK

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The objective of this work was to develop an equation to predict drip loss in pork, based on other pork quality measurements. Data from 1.072 carcasses from gilts (G), barrows (B) and immunologically castrated barrows (ICB), from eight genotypes, were used. From the eight genotypes, seven were of high lean meat yield and one was of superior meat quality. Seventy three models, among linear and non-linear, were adjusted, aiming to evaluate the effect of temperature (Temp45) and pH (pH45) 45 post-slaughter, temperature (Temp24) and pH (pH24) 24 h post-slaughter, L*, a*, and b* values, marbling, difference between pH45 and pH24 (DifpH), difference between Temp45 and Temp24 (DifTemp), and color saturation index on loin DL. Sex (G, B, and ICB) and category (Normal – G and B from the seven genotypes of high lean meat yield; Immunocastrated – ICB from the same high lean meat yield genotypes; Special – G and B from the genotype with superior meat quality) were also included in the models. Statistical analyses were conducted using the GENMOD and NLMIXED procedures (SAS, 2008). The best models were chosen based on the Akaike Information Criteria (AIC). The mean, minimum, and maximum DL values were 5.51, 0.35, and 16.03%, respectively. The model that best fit (R^2 = 0.67) includes the effect of four explanatory variables: Temp45, pH45, L*, and b*. According to this model, pH45 and Temp45 explain 61% of the variation in the DL, while L* and b* values contribute additionally with only 5 and 1%, respectively. We opted for the second best model, which includes only Temp45 and pH45 (R^2 = 0.61), with loss of only 6% of the R^2. This model is subdivided in four parts: a) If pH45≥6.71 and Temp45≤26.87 ºC, DL = 2.45%; b) If pH45<6.71 and Temp45≤26.87 ºC, DL = 38.03 – 5.30*pH45; c) If pH45≥6.71 and Temp45>26.87 ºC, DL = -8.64 + 0.413*Temp45; d) If pH45<6.71 and Temp45>26.87 ºC, DL = -142.3 + 6.71*Temp45 + 19.92*pH45 – 0.939*pH45*Temp45. According to the estimates of this equation, we can affirm that the lowest DL value (2.45%) occurs at Temp45≤26.87 ºC and pH45≥6.71. We concluded that the DL increases gradually with pH45 reductions and Temp45 increases and that concurrent changes in both show additive effect on DL. This effect occurs proportionally starting from substantially higher pH and carcass temperature far below that observed in PSE carcasses, therefore, indicates intermediate and gradual quality losses between the PSE condition and normal meat.

Keywords: pork quality, non-linear regression, swine