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Edited by:

Ursula Gonzales-Barron

and

Vasco A. P. Cadavez

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Editors

Ursula Gonzales-Barron Polytechnic Institute of Bragança
Vasco Cadavez Polytechnic Institute of Bragança

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CONTENT

131: EVOLUTION OF LAMB MEAT QUALITY TRAITS UNDER PROLONGED VACUUM STORAGE

Gisela Rodrigues[1], Jose Lorenzo[2], Ursula Gonzales-Barron[1], Vasco Cadavez[1]

[1]CIMO Mountain Research Centre, Bragança, Portugal. [2]Meat Technology Centre Foundation of Galicia, Ourense, Spain

Introduction: Meat quality, as judged by the consumer, is mainly dictated by colour, juiciness and tenderness. Wet maturation of meat done by vacuum-packaging (VP) allows the ageing process to continue, yet in conditions that retard meat spoilage. The objective of this study was to evaluate the evolution of meat quality traits (colour, TBARs, water retention capacity [WRC] and Warner-Bratzler shear-force [SF]), and their interrelationships with physicochemical characteristics (pH, water activity [aw] and proximate composition) in VP lamb meat during refrigeration.

Methodology: Fifteen four-month old lambs from Bordaleira-de-Entre-Douro-e-Minho (BEDM) and 15 from Churra-Galega-Bragançana (CGB) breeds were slaughtered in an abattoir (Day 0). The ultimate pH [pH24] was measured 24 h after slaughter; and *Longissimus dorsi* muscle was cut in three segments, vacuum-packed and stored at 4ºC. On day 1, proximate analysis was determined. On days 3, 9 and 15, pH, aw, Hunter L*, a*, b*, WRC, TBARs and SF were measured. For each meat quality trait, mixed models were adjusted to assess the effects of breed, sex, maturation time and physicochemical properties.

Results: All quality traits were affected by maturation time ($p<0.001$), excepting L* ($p=0.144$). There was no effect of sex on meat quality traits, while breed had an effect on colour, with CGB breed producing meats of lower L* ($p=0.050$), a* ($p=0.004$) and b* ($p=0.005$). While BEDM meats were more tender ($p=0.002$) than CGB meats, breed was not found to affect either TBARs ($p=0.408$) or WRC ($p=0.680$). None of the physicochemical properties modulated WRC. Meats of lower aw presented lower L* ($p=0.065$), a* ($p=0.072$) and SF ($p=0.001$), and higher TBARs ($p=0.051$). Fat content was found to inversely affect only SF ($p=0.014$) while protein content did not modulate any quality trait. pH24 had a strong effect ($p<0.001$) on b* and SF. Although meat became more tender from day 3 to 9, it was not significantly improved from day 9 to 15 (final SF=2.96±0.155 kg/cm^2).

Conclusion and Relevance: The evolution of colour and tenderness of VP lamb meat was different between breeds. Hence, further studies should be undertaken to elucidate the effect of breed disentangling it from that of pH.

Keywords: Colour; water retention capacity; shear-force; TBARs; maturation