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CONTENT

123: MICROBIAL CONTAMINATION OF LAMB CARCASSES AND MEAT FROM AUTOCHTHONOUS PORTUGUESE BREEDS

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Introduction: Despite the high consumption of lamb meat in Portugal, there is limited information on its microbiological safety. The objective of this study was to evaluate the levels of hygiene indicator microorganisms and occurrence of pathogens on lamb carcasses and meat from two autochthonous Portuguese breeds, Bordaleira-de-Entre-Douro-e-Minho (BEDM) and Churra-Galega-Bragançana (CGB); and evaluate possible associations among these bacterial groups within slaughter batches.

Methodology: On 11 sampling visits, 30 BEDM and 30 CGB four-month old lambs were slaughtered, and 400-cm^2 pooled neck/loin/hind swabs were taken after carcass dressing. After 24-hour chilling, *L. dorsi* sections were vacuum-packed (VP) and stored at 4ºC. Swab samples were analysed for mesophiles, coliforms, *Escherichia coli*, *Salmonella* spp., *L. monocytogenes* and *E. coli* O157, while meat samples were analysed for *Salmonella* on the 3rd, 9th and 15th day after slaughter. Linear and logistic mixed models were adjusted to assess any effect of breed on microbial counts/prevalence.

Results: BEDM lamb carcasses presented higher counts ($p<0.05$) of mesophiles (3.52 log CFU/cm^2), coliforms (0.936 log CFU/cm^2) and *E.coli* (0.307 log CFU/cm^2) than CGB carcasses (3.03, 0.633 and 0.079 CFU/cm^2, respectively), probably arising from the longest hair of BEDM sheep introducing greater contamination into the slaughter lines. In terms of pathogens, there was no difference between BEDM and CGB in the incidences of *Salmonella* spp. (21.4% [95% CI: 10.0–40.2%] versus 16.7% [7.10–34.3%]), *L. monocytogenes* (3.50% [0.50–21.4%] versus 6.70% [1.60–23.1%]) and *E. coli* O157 (32.1% [17.6–51.1%] versus 16.7% [7.10–34.3%]). On a batch basis, the presence of *E. coli* O157 was not associated with higher counts of coliforms ($p=0.812$) or *E. coli (*$p=0.706$). However, when *Salmonella* was found in a sampled batch of lamb carcasses, the odds of finding *Salmonella* in meat, at a later stage in the chain, increased by 8.705 times ($p=0.078$).

Conclusion and Relevance: This study revealed the potential public health risk posed by lamb meat due to the frequent contamination of their carcasses with *E. coli* O157, *Salmonella* spp. and *L. monocytogenes*, in decreasing order. Beyond the improvement in slaughter hygiene, further investigation should focus on on-farm interventions such as improved husbandry, feeding with probiotics and use of vaccines.

Keywords: *Listeria monocytogenes*; *Escherichia coli* O157; *Salmonella*; coliforms; abattoir