

Effects of the Texel Muscling QTL (TM-QTL) on lamb tenderness

Lambe, N.R.¹, Macfarlane, J.M.¹, Richardson, R.I.², Nevison, I.³, Haresign, W.⁴, Matika, O.⁵ and Bunger, L.¹, ¹SAC, Kings Buildings, Edinburgh, United Kingdom, ²University of Bristol, Division of Farm Animal Science, Langford, Bristol, United Kingdom, ³BioSS, Kings Buildings, Edinburgh, United Kingdom, ⁴IBERS, University of Wales Aberystwyth, Aberystwyth, United Kingdom, ⁵The Roslin Institute and R(D)SVS, University of Edinburgh, Midlothian, United Kingdom; Nicola.Lambe@sac.ac.uk

A QTL identified on Chr 18 in Texel sheep (TM-QTL) increases loin muscling. This study assesses TM-QTL effects on Texel lamb tenderness. Grass-fed lambs (male and female), from 7 TM-QTL carrier sires, were ultrasound scanned then slaughtered at 20w. After aging for ~1w, shear force tenderness was measured in a loin (ShF_loin) and leg (ShF_leg) muscle. Paternally-inherited TM-QTL genotypes classified lambs as non-carriers (n=85), carriers (n=118) or unknown (n=6). An untrained taste panel also assessed loin texture (TP_loin) on 20 non-carriers and 20 carriers. Mixed models were fitted to validate direct effects of TM-QTL on loin muscle depth (MLL_D) and weight (MLL_wt), and to estimate indirect effects on ShF_loin, ShF_leg and TP_loin. TP_loin was adjusted for sample order and assessor. Other traits were adjusted for carcass weight and other relevant factors. TM-QTL carriers had significantly (P<0.001) higher MLL_D (+5%) and MLL_wt (+6%) than non-carriers, but effects of TM-QTL on ShF_loin, ShF_leg and TP_loin were non-significant (all P>0.3). Genotyping of dams further improved the classification into 40, 53, 17, 34 and 65 as non-carriers, heterozygotes inheriting the TM-QTL allele from sire and dam, homozygous TM-QTL and unknown, respectively. The re-classification revealed a polar-overdominant imprinting mode of inheritance, with only lambs inheriting TM-QTL alleles from their sire, and not their dam, showing increased MLL_D (+6%) and MLL_wt (+4%). However, genotype effects on tenderness remained statistically non-significant (P>0.1). These results imply that TM-QTL in Texel sheep increases loin muscling without evidence of it affecting tenderness.

The quality of a new sheep meat product: effect of salting and ageing process

Teixeira, A., Rodrigues, M.J., Pereira, E. and Rodrigues, S., CIMO, Escola Superior Agrária - Instituto Politécnico de Bragança, Campus Sta Apolónia Aptd 1172, 5301-855, Portugal; teixeira@ipb.pt

With the main objective to find a strategy to give added value to meat from culled animals a study was conducted to create a new product promoting meat with very low commercial price and sufficiently versatile. Thirteen culled ewes from Churra Galega Bragançana breed, between 2 and 9 years old were used. According to the definition of processing method the effects of ageing, salting and drying on physical characteristics of meat such as color and water activity were assessed in subscapularis and semimembranosus muscles. Animals were slaughtered in the Bragança commercial abattoir, with an average carcass weight of 20 kg. After slaughter carcasses were refrigerated at a temperature of 4 °C and 6 and 7 carcasses aged for 2 and 8 days, respectively. Carcasses were divided into quarters and deboned. The boneless meat was then submitted to a salting process for 72 hours followed by more 72 hours air-dried at °C. Meat characteristics such as pH, color, water activity, water-holding capacity, texture and determination of hemic pigments were also evaluated in the longissimus thoracis et lumborum muscle. The meat pH, water-holding capacity and pigments were not affected by meat ageing process which influenced meat color. All parameters values decreased with increasing days of aging and Chroma (C*) values were higher (32.6 vs 22.8) than Hue (H*) values (52.9 vs 54.3), giving a brighter color meat. But the most affected meat quality parameter by aging process was texture making the meat tender, 6.2 and 9.0 kgf for 8 or 2 days ageing, respectively. During the salting process, there was a decrease in brightness (L*), red (a*) and yellow (b*) indexes. So, H* value increased from 25.6 to 56.6 and C* value dropped from 171.8 to 30.6 producing a dark meat as result of salting and dry-air. During salting as well as during air-drying the values of meat water activity (aW) dropped from 0.86 to 0.79 and from 0.79 to 0.76 which was extremely important for final product conservation.