

A COMPARISON OF BREED AND CASTRATION ON PHYSICAL CHARACTERISTICS OF GOAT MEAT

N.M.W. PRATIWI, D.G. TAYLOR, J. SUMARMONO, and P.J. MURRAY

School of Animal Studies, University of Queensland, Gatton Campus, QLD 4343

Most goat carcasses are low in fat when compared to other species such as sheep. In other animal species, breed has a major influence on meat colour, cooking and palatability traits of tenderness and juiciness (Sanudo *et al.* 1997), while castration influences the characteristics of meat at slaughter and the amount of intramuscular fat (Lawrie 1998).

To determine if these traits in goats were influenced by breed and castration, we slaughtered 20 six months old Boer and Feral bucks at 30 kg body weight. Five of each group were castrated using elastrator rubber rings. During the experiment, all bucks were reared under pasture conditions and had free access to goat pellets and grassy lucerne hay. Muscles of *Longissimus thoracis et lumborum* (LL), *Vastus* group (Vas), and *Triceps brachii* (TB) were sampled for cooking loss and shear force assessment. A Minolta Chromameter (L^* , a^* and b^* values) was used to measure meat colour as well as subjective evaluation using a 9-point colour scale (1=pale red, 9=red). At the same time pH at 24 h was evaluated at the loin eye muscle area at rib 12/13th while fat colour was measured on the pubic area of ventral abdomen subcutaneous fat using a 9-point colour scale (0=white, 9=yellow).

Table 1. Effect of breed and castration on physical characteristics of meat

Components	Mean				SE
	BC ¹	BE ²	FC ³	FE ⁴	
PH	5.7	5.7	5.8	5.8	0.05
Cooking loss LL (%)	45.9	46.2	40.6	42.3	1.46
Cooking loss Vas (%)	40.9 ^{ab}	42.4 ^a	27.3 ^c	31.1 ^{bc}	2.60
Cooking loss TB (%)	40.0 ^a	39.4 ^a	27.0 ^b	32.3 ^{ba}	2.29
Shear force LL (kg/cm ²)	6.6	7.5	7.5	8.4	0.59
Shear force Vas (kg/cm ²)	5.5	6.6	6.8	6.0	0.74
Shear force TB (kg/cm ²)	4.9	4.4	4.8	5.2	0.35
<i>Muscle colour:</i>					
a^* value	23.9 ^a	15.7 ^b	25.3 ^a	26.1 ^a	0.78
b^* value	4.3	3.9	3.1	2.9	0.48
L^* value	50.4 ^a	42.2 ^c	44.3 ^{bc}	46.9 ^{ba}	1.13
Subjective score	3.6 ^b	2.6 ^{ba}	4.8 ^a	3.8 ^a	0.45
Fat colour	3.6 ^{ba}	2.6 ^b	4.8 ^a	3.8 ^{ba}	0.45
Total pigment (mg/g)	2.4	1.8	5.1	4.5	0.96

^{a,b,c} means within the rows with different superscripts are significantly different (P<0.05)

¹Boer castrated, ²Boer entire, ³Feral castrated, ⁴Feral entire

Entire Boer bucks had a significantly (P<0.01) higher percentage cooking loss for *Vastus* than Boer and feral castrated bucks as well as feral entire bucks, while for *Triceps brachii* cooking loss, castrated Boer bucks had a higher percentage (P<0.01). The value of a^* and L^* for entire Boer bucks were significantly (P<0.01) lower than entire feral bucks while the score of fat colour was significantly (P<0.05) higher in castrated feral bucks than for other group. In conclusion, breed and castration have a major influence on some physical characteristics of meat such as cooking loss, meat colour and fat colour.

SANUDO, C., CAMPO, M.M., SIERRA, I., MARIA, G.A., OLLETA, J.L. and SANTOLARIA, P. (1997). *Meat Sci.* **46**, 357-65.

LAWRIE, R.A. (1998). 'Meat Science'. 6th Edition. (Cambridge: Woodhead Publishing Ltd).

Email: nmw@sas.uq.edu.au