COOKING TEMPERATURE INFLUENCES GOAT MEAT QUALITY

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I. INTRODUCTION

The method of cooking meat and end-point temperature play a critical role in goat meat quality [1, 2]. The aim of this study was to understand the influence of cooking temperature on goat meat quality, particularly tenderness and cooking loss and how it is associated with other meat quality attributes.

II. MATERIALS AND METHODS

Ten, (1 year old) Boer wethers, were sourced from Strathbogie goat farm, Victoria and were transported to Cedar Meats, Brooklyn, Australia. The goats were kept in lairage overnight and slaughtered the following day. Carcasses were chilled overnight at 4 °C. The *Longissimus thoracis et lumborum* (LTL) and *Semimembranosus* (SM) from the left and right side of the carcasses were collected 24 h after slaughter and allocated to two aging periods, 0d and 7d, respectively, and then stored under vacuum at 4 °C. Muscle samples were cooked in a water bath (F38-ME, Julabo, 77,960 Seelbach/Germany) to 3 different end-point temperatures (60 °C, 70 °C, 80 °C). The temperature of the sample was measured using T-type thermocouples (Grant Instruments, Australia). Samples were then cooled in ice water to prevent further cooking, patted dry with a paper towel and weight was recorded. The samples were stored in plastic bags at 4 °C in a chiller overnight prior to the Warner-Bratzler shear force (WBSF) test using a texture analyser (LS5 Ametek Lloyd Instruments Ltd., Largo, FL, USA). All statistical analyses were conducted using residual maximum likelihood with Genstat (16th Edition,VSN International Ltd., Hemel Hempstead, UK). It was analysed as 2 x 2 x 3 factorial design, with 3 muscles, 2 ageing period, and 3 cooking temperatures.

III. RESULTS AND DISCUSSION

The cooking temperature increased the cooking loss from 60 °C to 80 °C ($P < 0.001$) in both LTL and SM (Figure 1). Similar trend of increase in WBSF ($P < 0.001$) with cooking temperature was observed in both the muscles (Figure 2). Liu *et al*. (2013) reported a similar increase in cooking loss and WBSF with increase in cooking temperature in goat SM. The PCA biplot illustrated that cooking loss, and volume shrinkage are closely related to the WBSF. The biplot showed that cooking temperature is the variable separating the scores on the PC1 component explaining 49.51 % of the variability of the data.

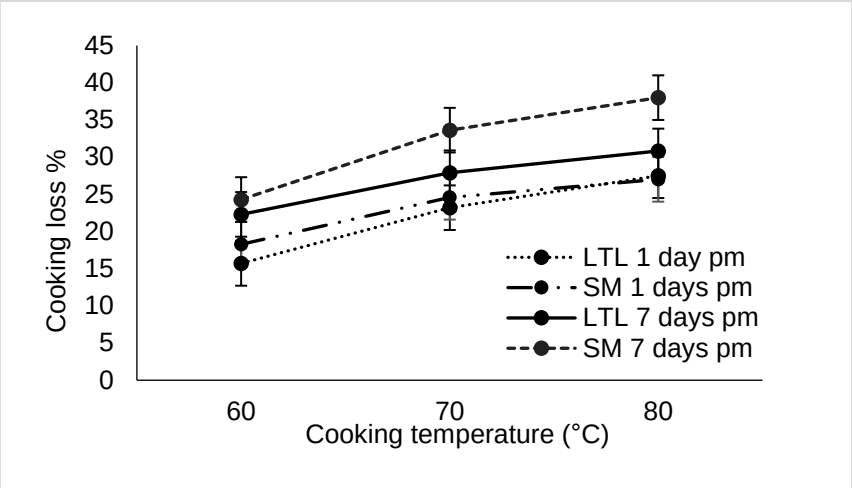

Figure 1. Effect of cooking temperature on cooking loss %

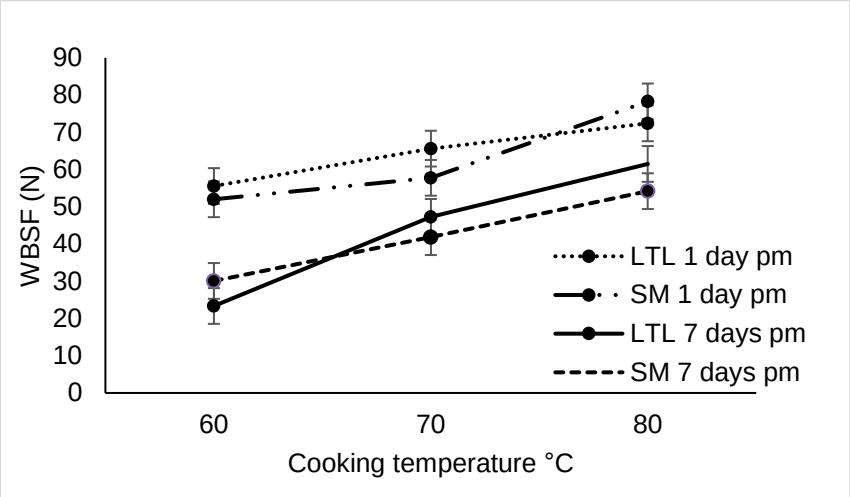

Figure 2. Effect of cooking temperature on WBSF (N)

IV. CONCLUSION

Cooking end-point temperature is an important contributor to goat meat quality, particularly tenderness and cooking loss.

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