PRELIMINARY DATA ON THE RATE OF GLYCOLYSIS IN OVINE CARCASSES UNDER COMMERCIAL PROCESSING

E.S. TOOHEY and D.L. HOPKINS

NSW Department of Agriculture, Centre for Sheep Meat Development, PO Box 129, Cowra, NSW 2794

Electrical stimulation can be used to accelerate the rate of pH decline, thereby hastening the onset of rigour (Shaw et al. 1996) and conferring meat quality advantages. Optimising this decline for different products is a major challenge for the processing industry. The aim of this experiment was to examine the effects of different electrical inputs on pH and temperature decline in sheep carcasses that were conventionally chilled.

The 180 Merino sheep used in this experiment were sourced on-farm and transported to the abattoir and held in a paddock for 1 week prior to slaughter. The following electrical inputs are used routinely by the abattoir; high voltage stimulation (1130 V peak, 14 Hz the rms V is 800 V) for 100 sec, spinal discharge (500-585 V, 50 Hz) for 3-4 sec, and an immobiliser (40 V, current 1.0-1.5 amps) for 40 sec. The high voltage tunnel was switched on for 90 animals, and off for 90 animals (alternating 10 on, and 10 off) to examine the effect of the high voltage system on pH and temperature decline. The pH and temperature measurements were taken in the m. longissimus thoracis et lumborum muscle at the lumbar/sacral junction at approximately 1, 2, 3, 5, 6 and 22.5 h after slaughter.

The average predicted pH and temperature decline in carcasses subjected to the high voltage system is shown in Figure 1. A pH of below 6.0 was achieved at 35ºC, which falls well outside recent recommendations for achieving optimal eating quality in different markets (Anon. 2003). This indicates that the carcasses are over stimulated and ‘heat shortening’ is likely (Anon. 2003), ultimately having negative effects on meat quality.

Carcasses not subjected to high voltage stimulation had an initial pH below 6.5 (Figure 1) approximately 30 mins after slaughter. This was lower than findings reported by Shaw et al. (1996), where the initial pH was 6.8 one h after slaughter. This would indicate that the other electrical inputs (spinal discharge and immobiliser) are also affecting pH decline. In summary, the results suggest that further research and validation is required to optimise the electrical inputs in this abattoir to ultimately improve the eating quality of meat for consumers.

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Email: edwina.toohey@agric.nsw.gov.au