

CONSUMER RESPONSE TO EATING QUALITY OF OVINE AND BOVINE MEAT AND DEMOGRAPHIC EFFECTS

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I. INTRODUCTION

A steady decline in sheep meat and beef consumption in Australia over the past 30 years has been linked to a number of consumer trends including the increasing affordability of alternative protein sources such as chicken and pork, and a move away from red meat for health reasons [1]. Within this competitive environment, MLA (Meat Livestock Australia) leverages a number of marketing strategies for red meat and “premiumization” is a key trend. Many consumers are willing to pay more for premium products that enhance eating experiences [2, 3]. Understanding how these marketing strategies could be further targeted for specific demographic groups based on consumer sensory perceptions of red meat would provide a new strategy for premiumization. A tasting trial was run with the aim of capturing consumer eating quality responses for beef and sheep meat and to identify potential differences in response to the different red meat species.

II. MATERIALS AND METHODS

Beef (n = 8, aged 35 days) striploins (*longissimus lumborum*), and Dorper sheep loins (n=12, aged for 14 -35 days) off saltbush pasture (*Atriplex sp.*) were obtained from a specialty butcher. The ageing time was typical of commercially available products. In addition, ‘link’ samples (used to familiarize the consumer with the product to be served, but results not used) were MSA graded beef porterhouse steaks (n=10) and lamb midloin chops (n=30) purchased from a supermarket. Grilled loin meat samples were presented to consumers using a modified MSA consumer cooking and sensory evaluation protocol with four consumers per session and three samples per consumer (link plus duplicate of either beef or sheep meat). Samples were cooked immediately before serving. Consumers were not pre-recruited, but solicited as they walked past the booths and given the choice of tasting beef or sheep meat. Eating quality questions were based on the format described in Watson et al [4], and the demographic questions based on the work of Hwang et al [5]. Consumers participated in either beef (36 consumers) or sheep meat tasting sessions (38 consumers). Consumers recorded their response to tenderness (T), juiciness (J), flavour (F), overall liking (OL) and odour liking on scales and these were subsequently converted to a number from 0 to 100. Consumers were placed in age categories (18-30 or 31-70 years old). The MSA eating quality scores (MQ4 for beef, SEQ for sheep meat) were determined as described below and data was analysed using REML in Genstat (16th edition).

Lamb SEQ score (1) = 0.3 (T) + 0.1 (J) + 0.3 (F) + 0.3 (OL) [6]

Beef MQ4 score (1) = 0.3 (T) + 0.1 (J) + 0.1 (F) + 0.3 (OL) [7]

III. RESULTS AND DISCUSSION

Demographics

The demographic distribution was very similar between the beef and sheep tasting groups. The gender split was males 45%, females 55%. 46% of the group fell into the 40-60 year old age group followed by 12% in the 26-30 year old category, 12% in the 31-39 year old category, 11% in the 61-70 year old category, 10% in the 20-25 year old category and 8% in the 18 to 19 year old category. Most consumers described their cultural heritage as Australian (70%) followed by British 12%, Asian 8%, Other 5% and European 4%.

Eating quality

Table 1 shows the effect of the interaction between age and meat category on the consumer sensory scores. Those consuming beef generally had similar sensory scores for the 18-30 and 31-70 year old categories ($P>0.05$). In contrast, for those consuming sheep meat samples, the younger category (18-30) gave lower scores and found the meat less acceptable than the older consumers (31-70) ($P<0.05$). This was particularly evident for odour liking, where the average scores for young consumers of sheep meat was (MSA score = 56), and for older consumers (MSA score = 74).

Table 1: Effect of meat category (Beef or Sheep) and age (18-30 or 31-70 years old) on consumer sensory scores

	Beef		Sheep		SED	F-value
	18-30	31-70	18-30	31-70		
Tenderness	77.6	70.7	66.4	77.0	4.91	0.012
Overall liking	75.4	71.8	69.2	77.5	4.45	0.046
Flavour	77.8	69.6	66.4	76.9	4.90	0.008
Juiciness	78.0	70.7	70.1	79.2	4.42	0.011
Odour liking	71.9	68.7	56.0	74.4	5.10	0.002
MQ4/SEQ	77.0	70.8	67.6	77.3	4.30	0.008

There was an interaction between age and sex for odour liking ($P < 0.05$). Males in the young and old categories (18-30 and 31-70 respectively) had similar average scores for odour liking (68.8 vs 69.1; SED = 5.10; $P > 0.05$) whereas young people, on average, gave much lower scores for odour liking relative to older people (59.1 vs 74.0, SED = 5.10; $P < 0.05$).

Thus, consumers rate eating quality attributes differently between meat species. It was observed during the development of the MSA grading system that tenderness is the most important driver for consumer liking of beef [4], while flavour is the most important driver for liking for sheep meat [8]. Kubberod et al [9] proposes there is an increasing trend for young consumers to avoid red meat, especially younger females, and their responses to the sensory characteristics are linked to their attitudes towards red meat. This effect may go some way to explain the generally lower ratings for sheepmeat eating quality given by the younger consumer group. However, considering older consumers typically have a higher discretionary spending ability, and Australia's growing aging population, their preference for sheep meat provides justification for development of premium sheep meat products for this demographic group. Premiumization of beef loins such as dry aging has already been shown to have a price uplift, achieving 200AUD/kg in several outlets in Australia. Application of similar strategies could enhance the market opportunity for sheep meat. Also, understanding the importance of red meat as a rich protein source for older consumers along with familiarity and convenience in a meal format could provide opportunities for new products.

CONCLUSION

The results of this preliminary trial indicate that preference for meat species is age and gender dependent. This knowledge presents opportunity for the beef and sheep meat industries to improve competitiveness by adding value to existing products and tailoring new products to different demographic groups. These results also provide demographic targets for consumer education/familiarization to increase red meat consumption.

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