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Cross-cultural consumers' liking of New Zealand commercial lamb (#387)

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Introduction

The eating quality of meat has traditionally been studied and defined to suit Western markets and consumers' choice. In 2018, China accounted for one-third of New Zealand's red meat exports [1]. Asian consumers possess distinctive preferences for meat products compared to New Zealand consumers due to different cultural and cuisine factors. Thus, it is important to understand cross-cultural consumer preferences for different types of New Zealand lamb and price elasticity across different levels of meat quality. The objective of this study was to evaluate the eating quality of three types of New Zealand commercial lamb by New Zealand and Chinese consumers and their willingness to pay for four conceptual quality levels.

Methods

The eating quality of three types of commercial lamb typically exported from New Zealand was evaluated by New Zealand (n=160, University of Otago, Dunedin) and Chinese (n=160, residence in New Zealand < 3 years, Plant and Food Research, Auckland) consumers. Eight loins from castrated lambs from each of three forage-based production systems involving different combinations of animal genetics, diet and age at slaughter were evaluated: GRASS-COMP-8M (grazing perennial grass-based pasture, composite breed, 8 months old/mid-season, 17.1 kg mean carcass weight), CHICORY-COMP-8M (grazing chicory, same composite breed and age at slaughter as GRASS-COMP-8M, 18.1 kg mean carcass weight) and MIXP-MERINO-12M (mixed pasture: ryegrass-white clover-red clover, Merino breed, 12 months old/late season, 19.0 kg mean carcass weight). Loins were sous vide cooked for 1 hr and then grilled to 60°C in Dunedin (medium) and 71°C in Auckland (well done). Different temperatures were selected after a preliminary assessment showed that Chinese consumers rejected samples with a pink centre. Each consumer rated overall liking, flavour liking, degree of juiciness and degree of tenderness of three lamb samples using a 100 mm linear, non-structured line scale anchored at each end (0: dislike extremely, not juicy, not tender to 100: like extremely, very juicy, very tender). Consumers also indicated their willingness to pay (NZ\$ per kg) for the following categories of lamb quality: unsatisfactory, good everyday, better than everyday and premium [2].

Results

There were no interactions (P>0.05) between consumer ethnicity and type of lamb for any of the rated sensory variables. New Zealand consumers as-

signed higher scores for tenderness, juiciness, flavour liking and overall liking compared to Chinese consumers (P<0.05), specifically for juiciness (Table 1). The lower sensory scores assigned by Chinese consumers are probably due to the higher final cook temperature of the lamb. It is possible that grilling the lamb compared to a more traditional soup or hotpot cooking method accentuated the effects of the higher degree of doneness. Regardless of consumer ethnicity, tenderness, flavour and overall liking were higher for meat from both GRASS-COMP-8M and CHICORY-COMP-8M compared to MIXP-MERINO-12M lambs. Degree of juiciness was higher (P<0.05) for meat from GRASS-COMP-8M than MIXP-MERINO-12M lambs, with meat from CHICORY-COMP-8M lambs being intermediate (P>0.05). Consumers assigned similar scores for all sensory traits for meat from GRASS-COMP-8M and CHICORY-COMP-8M lambs indicating that animal feeding (grass vs. chicory) did not change consumer preferences for meat. The age at slaughter and genetics of these animal groups were the same with the only difference being their diets. The lower preference for meat from the MIXP-MERINO-12M animal group cannot be attributed to a single factor since it represents a production system with confounded animal factors. The standardized coefficients of the multiple linear regression for overall liking (dependent variable) were 0.74 for flavour, 0.16 for tenderness and 0.12 for juiciness, indicating that flavour was the most important sensory attribute influencing consumer overall liking scores. Consumer willingness to pay increased linearly with lamb quality level with larger price variation for premium than unsatisfactory quality lamb (Figure 1). Chinese consumers were willing to pay more for high quality lamb than New Zealand consumers, especially for premium quality.

Conclusion

Cross-cultural evaluation of New Zealand commercial lamb indicates that meat from composite lambs fed grass or chicory and slaughtered at 8 months old may result in higher consumer liking scores than meat from Merino lambs fed a mixed pasture and slaughtered at 12 months old. Chinese consumers assigned lower scores than New Zealand consumers for all sensory traits, especially juiciness, but are willing to pay more for higher quality lamb. Flavour was the most important sensory attribute influencing overall liking of lamb.

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Notes

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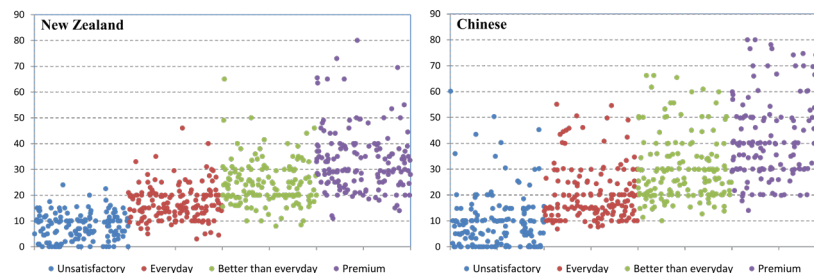


Figure 1. Willingness to pay (0-80 NZ\$/kg) of New Zealand and Chinese consumers for each quality level.

Consumer ethnicity	Overall	Flavour	Juiciness	Tenderness
New Zealander	69.2 ^a	68.2 ^a	64.7 ^a	71.3 ^a
Chinese	61.2 ^b	59.5 ^b	44.9 ^b	63.8 ^b
<i>Type of Lamb</i>				
GRASS-COMP-8M	66.1 ^a	65.1 ^a	57.4 ^a	69.0 ^a
CHICORY-COMP-8M	67.2 ^a	65.9 ^a	54.0 ^{ab}	69.3 ^a
MIXP-MERINO-12M	62.3 ^b	60.6 ^b	52.9 ^b	64.3 ^b

^{a,b} Values within a column with different superscript letters differ (P<0.05). Consumer ethnicity*Type of lamb P>0.05.

Table 1. New Zealand and Chinese consumer scores for overall liking, liking of flavour, degree of juiciness and degree of tenderness of lamb from three production systems.

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