THE EFFECTS OF PACKAGING AND RETAIL DISPLAY OF PORK LOINS ON CONSUMER ACCEPTABILITY AND SURFACE COLOUR

Y. Peng[1], K. Adhiputra, A. Padayachee[1], M. Ha[1], H. A. Channon[1,2], R. Warner*[1]
[1]Faculty of Veterinary and Agricultural Sciences, The University of Melbourne, Parkville, VIC, Australia;
[2]Australian Pork Limited, 606 St Kilda Road, Melbourne, VIC, Australia.

*Corresponding author: robyn.warner@unimelb.edu.au

I. INTRODUCTION

Meeting the consumers' demand for high quality pork is a main focus for the pork industry and the pork consumers' re-purchase intention is negatively affected by inconsistent eating quality [1]. Understanding the importance of various factors for pork eating quality is essential for the pork industry to undertake an integrated assurance system to ensure the highest quality [2]. Packaging of pork has been shown to be a factor which could affect pork quality [3, 4]. As Australian pork loins are commonly displayed inside high oxygen modified atmosphere packaging (HiOx-MAP) in retail, it is important to determine the full effects of MAP packaging on the eating quality of pork loins. The aim of this study therefore was to investigate the effects of packaging pork loins in MAP or VAC followed by simulated retail display, on the consumer acceptability, purchase intention and various sensory attributes.

II. MATERIALS AND METHODS

Forty loins (*longissimus thoracis et lumborum*) from both sides of 20 pig carcasses were collected at 1-2 days post-slaughter, from carcasses weighing about 65 kg. Three x 12.5 cm sections were removed and allocated to treatments to allow for randomization of position between sides and location within the loin. The treatments were control (no packaging), HiOx-MAP (packed in 80% O_2:20% CO_2) or vacuum (packed in vacuum bags). The control samples were immediately frozen at -20°C. Packaged meat was stored under simulated retail display for 7 days. After completion of treatments, sections were sliced further into 5 x 2.5 cm chops, within each section and frozen at -20°C. Prior to sensory assessment, chops were thawed for 24 h at 4°C. The design of the sensory assessment was in accordance with previous sensory studies on pork [1, 5] but with higher numbers of consumers and samples. Ten sessions were conducted with 100 'naïve' consumers, with no re-use of consumers, and each consumer consumed six pieces of meat. The allocation of samples to, and within, sensory session was randomised using Williams Latin–square design. Consumers gave scores for the meat, as shown in figure 1, with lower ratings being less acceptable and the scores were later converted to a number from 0 to 100. Genstat (16th edition) was used to conduct ANOVA on the data and means were separated using SED's.

III. RESULTS AND DISCUSSION

The impact of packaging and ageing on sensory attributes of pork are shown in Figure 1. Samples vacuum packed for 7 days were preferred for tenderness, flavour, overall liking and quality relative to control and 7 day MAP samples ($P<0.05$ for all except flavor, P-value=0.073). In addition, the 7 day vacuum packed had higher scores for re-purchase intention, relative to the 7 day MAP samples. In terms of tenderness, vacuum packaging of pork resulted in an average score of 54.1, which were approximately 5 units higher than the control and MAP treated samples. Five units is a significant difference in testing of consumer acceptability.

The lack of effect of packaging and ageing on sensory scores for aroma and flavor of pork in our study is in agreement with a previous study [5]. The reduced sensory tenderness of pork loin in HiOx-MAP relative to vacuum in our study, is also in agreement with others [5]. The increase in overall liking and tenderness consumer scores for pork vacuum packed for 7 days is similar to that found by Channon et al. [1] who reported increases of 3.0 and 4.7 units respectively.

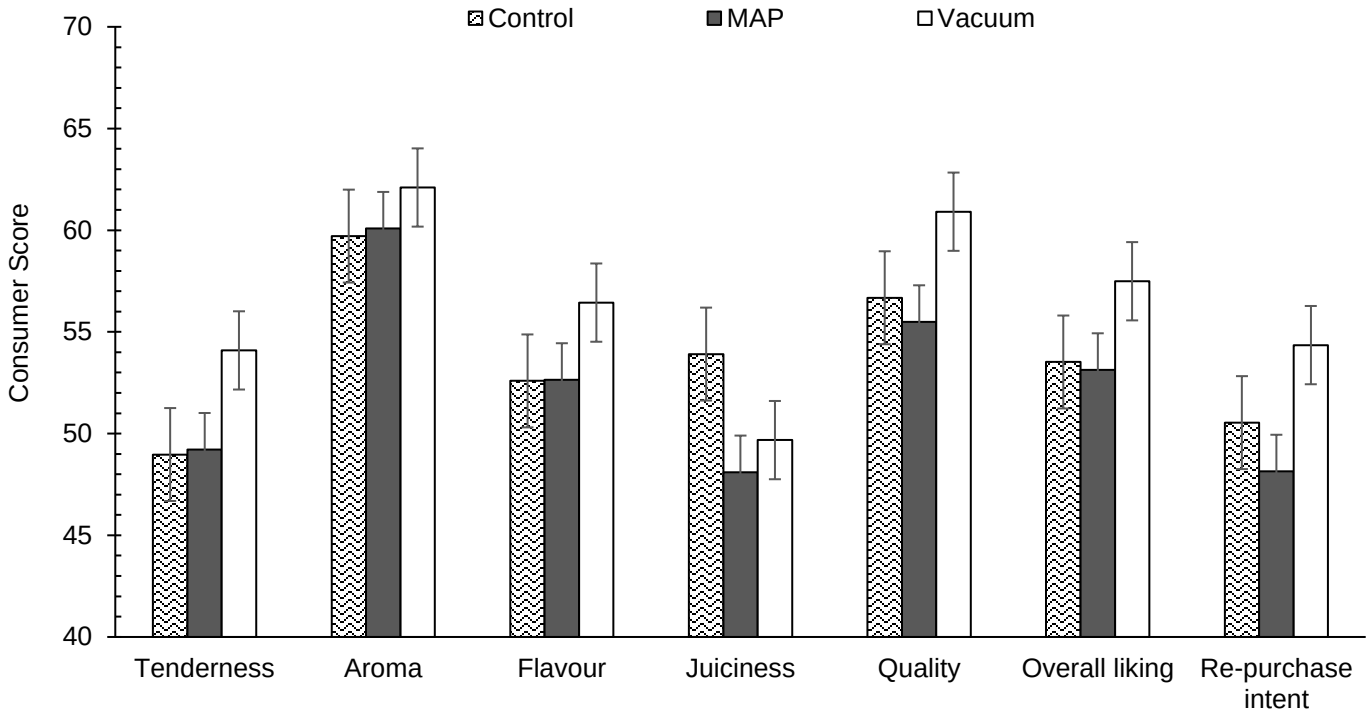

Figure 1 Effects of packaging (control, no packaging; MAP, Modified Atmosphere Packaging in 80% O_2, 20% CO_2 for 7 days; Vacuum, vacuum packaged for 7 days) on consumer scores for sensory attributes, overall liking and re-purchase intention of *porcine longissimus*. Data are presented as least squares means ± SED.

IV. CONCLUSION

This research has shown that pork loins have lower consumer acceptability in almost all sensory traits, when packed in HiOx-MAP. These results highlight the significant role of packaging in an integrated assurance system and the importance of addressing the negative impacts of the current packaging method on eating quality of pork. The use of vacuum skin packing (VSP), a recent innovation in packing for retail shelves, should be considered as the preferred option over MAP to ensure consistent delivery of high quality Australian pork.

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