

Project Number & Title: 3A-118 Investigation of Tenderness and Water Holding Capacity of Aged Pork Loins in Two Packaging Systems

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Aims and Objectives: Investigate the effect of high oxygen modified atmosphere packaging (hiOxMAP) and vacuum packaging (VAC) on objective measurement of tenderness and water holding capacity of meat. In addition, a combination of both VAC and hiOxMAP was also trialled.

Key Findings

- Testing of oxygen concentration in pork packaging from various Victorian Woolworth and Cole's supermarkets revealed hiOxMAP is still the most popular packaging method for Australian pork.
- HiOxMAP had a negative impact on overall colour, shear force, texture and water holding capacity of Australian pork loins compared to VAC.
- The negative influence of hiOxMAP correlated with increased lipid and protein oxidation which is well known to affect colour, texture and juiciness of meat
- VAC followed by HiOxMAP resulted in toughening of loins compared with VAC only treatment.
- However, pork loins aged in VAC followed by HiOxMAP resulted in improvement (compared with hiOxMAP only treatment) in hardness, chewiness, cohesiveness and protein oxidation without significantly affected colour and water holding capacity of pork loins.
- Overall, the best results for shear force, texture and water holding capacity of Australian pork loins were in VAC only treatment followed by combination treatment (VAC and hiOxMAP) followed by hiOxMAP only treatment.

Application to Industry

- An increase in usage of alternative packaging methods such as vacuum packaging and the more recent innovation vacuum skin packaging which are already used in Australian meat retail is recommended.
- The use of hiOxMAP should be limited to pork cuts with a high turnover to reduce storage time to less than 5 days due to toughening of pork loins in hiOxMAP.
- Sufficient ageing time (approximately 5 days) of pork loins in VAC prior to hiOxMAP may reduce impact on eating qualities.