THE ROLE OF PACKAGING IN BEEF QUALITY PRESERVATION: IMPLICATIONS FOR FOOD LOSS AND WASTE REDUCTION

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Abstract

Packaging helps preserve chilled beef by controlling the gas environment around the meat. This review examines evidence on vacuum, vacuum skin and high-oxygen modified-atmosphere packaging to assess quality preservation and potential food-waste reduction. Vacuum-based systems can limit lipid oxidation, while vacuum skin packaging can reduce purge loss relative to conventional vacuum packaging. High-oxygen atmospheres can maintain redness but may impair tenderness and juiciness. Effects vary with ultimate pH and storage temperature. Higher pH can accelerate microbial growth, and high-pH beef may remain red under high-oxygen atmospheres despite spoilage. Packaging selection should therefore combine microbial, physicochemical and sensory criteria rather than rely on appearance alone. Environmental benefits depend on whether the impacts avoided through reduced beef waste outweigh those associated with packaging.

Key words: *beef, packaging, shelf life, microbial spoilage, food waste*