Abstract:

High O_2 atmospheres (higher than 70 kPa O_2) have been recently suggested as an innovation to modified atmosphere packaging (MAP) for fresh processed vegetables to maintain sensory quality and safety. Visual appearance, colour, taste, off-odour, crispness, and microbial growth were monitored in a variety of lettuce salads, packed initially in 95% O_2, combined with the use of a barrier film for packaging. Mixed vegetable salads packed under conventional MAP (3 kPa O_2 and 5 kPa CO_2) were used as controls. Since temperature changes along the cool chain must be taken into account when quality loss and shelf life of fresh processed vegetables are evaluated, actual documented conditions (i.e. abusive temperatures of 7 and 12ºC) in the retail sale display were applied. Four days after processing the microbial recommended limit of 108 CFU/g for psychrotrophic bacteria was exceeded when product was held at 12ºC. However, when temperature within retail sale cabinets was 7ºC, this limit was exceeded almost 6 days after processing. At 7ºC no significant difference on total bacterial count between high O_2 and conventional atmospheres was observed and a slight difference in sensory quality was found. As expected, the best quality occurred when the lowest temperature was used, although no significant difference was found between high O_2 atmosphere and conventional MAP.