Title High oxygen combined with high carbon dioxide improves microbial and sensory quality of fresh-cut peppers

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Citation Postharvest Biology and Technology, Volume 43, Issue 2, February 2007, Pages 230-237

Keywords Minimal processing; Quality attributes; Bacteria; Yeast and mould; Food safety

Abstract

The effects of high O_2 and high CO_2 throughout storage on the microbial and sensory quality of fresh-cut bell peppers from two commercial 'California' cultivars grown under different climatic conditions were studied. The 'Meteor' cultivar was minimally processed in Leuven (Belgium) and the 'Requena' cultivar in Cartagena (Murcia, Spain). The storage conditions were (kPa O_2/kPa CO_2/kPa N_2) 100/0/0, 80/15/5, 60/0/40, 50/15/35, 20/15/65 and 21/0.03/ ~79 as control. Bell peppers freshly-cut in cubes were stored at 5 °C up to 9–10 days. Changes in total counts of mesophilic, psychrotrophic, yeasts and mould as well as *Enterobacteriaceae* were monitored. Individual and total sugars and organic acids contents, visual appearance, color, shriveling, off-aroma, crunchiness, flavor and overall quality were also evaluated. The results in both experiments showed that 80 or 50 kPa O_2 combined with 15 kPa CO_2 maintained the main sensory quality attributes and inhibited growth of the spoilage microorganisms and *Enterobacteriaceae* in minimally processed bell peppers.