

Abstract:

During recent years there has been an explosive growth in the market for fresh prepared fruit and vegetables (i.e. produce). The main driving force for this market growth is the increasing consumer demand for fresh, healthy, convenient and additive-free prepared produce items. However, fresh prepared produce items are highly perishable and prone to the major spoilage mechanisms of enzymic discoloration, moisture loss and microbial growth. Good manufacturing and handling practices along with the appropriate use of modified atmosphere packaging (MAP) are relatively effective at inhibiting these spoilage mechanisms, thereby extending shelf-life. Shelf-life extension also results in the commercial benefits of less wastage in manufacturing and retail display, long distribution channels, improved product image and the ability to sell convenient, added-value, fresh prepared produce items to the consumer with reasonable remaining chilled storage life. The application of novel high oxygen (super-atmospheric) MAP is a new approach for the retailing of fresh prepared produce items and is capable of overcoming many of the inherent shortcomings of current industry-standard air packaging or low oxygen MAP. The results from an extensive European Union and industry funded project have shown that high oxygen MAP is particularly effective at inhibiting enzymic discolorations, preventing anaerobic fermentation reactions and moisture losses, and inhibiting aerobic and anaerobic microbial growth (Day, 2001). Independent research undertaken in the Netherlands, Belgium, Australia, USA and Spain has also shown many interesting and mainly beneficial effects of high oxygen MAP and references to this research are listed. This paper highlights how extended shelf-life can be achieved by using high oxygen MAP. Practical guidance on issues such as safety, optimal high oxygen mixtures, produce volume/gas volume ratios, packaging materials and chilled storage temperatures are outlined, so as to facilitate the commercial exploitation of this new technology, which has already begun in the UK and Belgium.