

Title Evaluation of MAP engineering design parameters on quality of fresh-sliced mushrooms
Author F. Oliveira, M.J. Sousa-Gallagher, P.V. Mahajan and J.A. Teixeira
Citation Journal of Food Engineering, Volume 108, Issue 4, February 2012, Pages 507-514
Keywords Packaging design; Mushrooms; MAP; Fresh produce; Optimal gas composition; Shelf-life

Abstract

Modified atmosphere packaging (MAP) relies on the interplay between product-respiration and package-film-permeability with the aim of maintaining initial quality and extending shelf-life of fresh produce. This work evaluates the effect of MAP engineering design parameters (amount of product, number of perforations and weight of CO₂ scavenger) on quality of sliced mushrooms. Sliced button mushrooms were packed in a tray, covered with cellophane film, and stored at 10 °C for 3 days. Headspace gas composition and chemical and physical quality parameters (weight loss, pH, firmness and colour) were measured throughout the storage period. All design parameters produced a significant effect ($p < 0.05$) on quality. Addition of CO₂ scavenger in the package increased the deterioration of mushrooms. MAP optimisation design requires consideration of mushroom weight and number of film perforations. The optimal conditions found were 110 g of sliced mushrooms and 2 perforations (0.33 mm diameter) which led to an equilibrium gas composition of 3.6% O₂ and 11.5% CO₂, after 3 days of storage at 10 °C.