

Title Microbial quality of three exotic mushrooms packaged under modified atmosphere
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Abstract

Modified atmosphere (MA) packaging when combined with chilling usually leads to an increase in shelf-life from a microbiological point of view. Many perishable food products, e.g. mushrooms, can be stored under MA. Market for exotic mushrooms is growing in the US; therefore, it is necessary to optimize post harvest storage conditions to maintain the quality of these delicate products. The objectives of this study were to 1) determine the effect of different MA environment on the microbial quality of mushrooms and to extend the shelf-life of mushrooms using the best MA environment and storage temperature. Portabella (*Agaricus brunnescens*), pom pom (*Hericium erinaceus*), and shiitake (*Lentinus edodes*) mushrooms were packaged under three MA environments containing no O₂, high O₂ or air (used as control). Samples were stored at 4°C for 15 d during which microbiological, color, texture, and sensory analyses were determined at 3-d intervals. MA environment containing no O₂ maintained all mushroom samples quality up to 15 d of storage at refrigeration temperature of 4°C. Similarly, consumer tests revealed higher acceptability ratings for samples stored under MA containing no O₂. Samples stored under air were rated unacceptable after 9 d of storage. During storage, pom pom showed the highest discoloration and softer texture than those of portabella and shiitake. The combination of MA environment containing no O₂ and refrigeration storage delays mushroom spoilage. This technique has potential application as a low-cost means to extend the shelf-life of mushrooms and represents substantial savings for mushroom producers and retailers in the US.