

Title Shelf-life extension of North Carolina grown shitake mushroom by modified atmosphere packaging

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Abstract

Shiitake mushroom (*Lentinus edodes*) is a popular mushroom because they are edible and can be used for medicinal purposes. They are often dried and sold as preserved food in packages. Currently, shiitake mushrooms are being introduced as an alternative crop to the farmers in North Carolina (NC) due to the failing tobacco industry. Since the production of shiitake mushrooms is expected to be over 60,000 lbs by 2004 in NC, there is a need to study their quality and storage stability using various packaging techniques. Therefore, this study was carried out to 1) investigate the shelf-life extension of shiitake mushrooms stored under modified atmosphere packaging or standard stretch film and 2) determine microbial and sensory quality of mushrooms stored under various environments. Shiitake mushrooms were packaged under modified atmosphere or air and stored at 4 °C for 15 days. Microbiological (aerobic, psychrotrophic, and anaerobic bacterial counts), physical (color and texture), chemical (water activity, pH, and the presence of formaldehyde), and sensory analyses were determined at 3-d intervals. Aerobic, psychrotrophic, and anaerobic bacterial counts were lower for samples packaged under modified atmosphere than those stored in air. Similarly, panelists gave higher ratings (>3) to samples stored under modified atmosphere compared to samples under air (<1). Samples stored under air were rated unacceptable after 7 d of storage. Formaldehyde was not detectable in samples stored under modified atmosphere after 7 days. The use of modified atmosphere packaging along with refrigeration is expected to extend the shelf-life and preserve the microbial quality of shiitake mushrooms for up to 15 days. This could represent substantial savings for mushroom retailers in the state of North Carolina and the U.S.