

Title Use of hyperspectral imaging for evaluation of the shelf-life of fresh white button mushrooms (*Agaricus bisporus*) stored in different packaging films

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Citation Innovative Food Science & Emerging Technologies, Volume 11, Issue 3, July 2010, Pages 423-431

Keywords Hyperspectral imaging; Mushroom; PET; Polyethylene terephthalate; Shelf life; Packaging

Abstract

The shelf life of mushrooms packaged using different polymer top-films (PVC, PET with different levels of perforations) was investigated using hyperspectral imaging (HSI). Packaged mushrooms were stored at 4 ± 0.2 °C for 14 days and weight loss, Hunter *L*, *a*, *b* values, maturity index and in-pack gas composition (% CO₂ and O₂) were also measured. The results obtained showed that the PET film perforated with small holes (1 mm in diameter) was generally superior in terms of maintaining overall mushroom quality. Regression models were built to correlate HSI data with measured quality parameters. Prediction maps were generated from hyperspectral data to show the model performance at pixel level. Results presented in this work show hyperspectral imaging can be used to evaluate the effect of different packaging systems on mushroom quality and that perforated PET packaging film is a viable alternative to the conventional PVC packaging, facilitating an increase in shelf life from 10 to 14 days.