Title Biobased packaging for improving preservation of fresh common mushrooms (*Agaricus bisporus* L.)

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Abstract

Freshness of common mushrooms was related to the internal atmosphere composition during modified atmosphere packaging (MAP) experiments at 20 °C and 80% RH with stretchable polyvinylchloride (PVC) film, paper, and the same paper coated with a wheat gluten solution. MAP with the stretchable film led to a detrimental deterioration of mushrooms after only one day of storage: dark brown blotches appeared and almost 30% of mushrooms exhibited open veil. This was due to the formation of condensed water at the inner surface of the material and onto mushrooms combined to a high O_2 partial pressure (16 kPa) in the headspace. Wheat gluten (WG) coated paper was the most effective to improve the shelf-life of mushrooms since it allowed the preservation of a fair colour, unbroken veils, and an acceptable texture during 3 days. This beneficial effect was attributed to the combination of a medium CO_2 (9.5 kPa) and low O_2 (2.5 kPa) partial pressure, without condensation. The main drawback of using WG-coated paper was its high water vapour permeability that led to an important weight loss (3.8 wt.% on day 3). However it did not affect the overall quality of mushrooms within the storage duration.