

Effect of 1-methylcyclopropene (1-MCP) on quality of button mushrooms (*Agaricus bisporus*) packaged in different packaging materials

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Postharvest Biology and Technology, Volume 159, January 2020, 111023

Abstract

The effects of 1-MCP treatment on the quality of *Agaricus bisporus* mushrooms packed in three different packaging films, i.e., low permeable packaging (LPP), medium permeable packaging (MPP) and high permeable packaging (HPP), were evaluated. Quality factors included weight loss, color, texture, and sensory. Results show that 1-MCP can slow down the respiration rate of mushrooms. In LPP and MPP, where O₂ supply was limited, the respiration rate of mushrooms can be reduced by around 25%, while in HPP where there was constant O₂ supply, the respiration rate reduced by around 2%. The best effectiveness was obtained from the combination of 1-MCP and MPP, which created headspace composition of less than 0.1% of O₂, and 5–10% CO₂, providing more than 15 d of shelf life. This combination provided several benefits for mushroom quality including maintaining sensory quality, weight, and firmness, as well as altering the formation of flavor nucleotides process which has the potential to improve umami taste.