

Title Influence of UV-C treatment on antioxidant capacity, antioxidant enzyme activity and texture of postharvest shiitake (*Lentinus edodes*) mushrooms during storage

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Abstract

Shiitake (*Lentinus edodes*) mushrooms were exposed to UV-C light (4 kJ/m^2) and stored in modified atmosphere packaging (MAP) prior to 15 days at $1 \pm 1^\circ\text{C}$ and 95% relative humidity plus 3 days at 20°C . Mushroom firmness, total phenolics, total flavonoids, ascorbic acid and H_2O_2 contents, superoxide anion ($\text{O}_2^{\bullet-}$) production rate and activities of catalase (CAT), superoxide dismutase (SOD), ascorbate peroxidase (APX) and glutathione reductase (GR) were measured. UV-C treatment resulted in maintenance of a high level of firmness during 15 days at low temperature and reduced the decrease in firmness during shelf-life storage. Furthermore, treated samples showed higher total flavonoids, ascorbic acid, and delayed the increases in both $\text{O}_2^{\bullet-}$ production rate and H_2O_2 contents. However, no clear treatment effects were seen in total phenolics contents. The treatment also increased the antioxidant enzyme activities of CAT, SOD, APX and GR throughout the storage period. These results indicate that postharvest application of UV-C radiation can delay softening and enhance antioxidant capacity in shiitake mushrooms.