

# Inhibition of browning and shelf life extension of button mushroom (*Agaricus bisporus*) by ergothioneine treatment

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## Abstract

The effect of ergothioneine (EGT) on postharvest quality and possible browning mechanisms in button mushroom (*Agaricus bisporus*) was investigated. Mushrooms were sprayed with 0.12 mmol L<sup>-1</sup> EGT solution, and then stored at 4 °C for 17 d. Results demonstrated that EGT treatment effectively delayed the decline of lightness (L\*) value and firmness, maintained higher levels of total phenolics and ascorbic acid, and reduced browning degree, malondialdehyde (MDA) content and electrolyte leakage rate. However, EGT treatment had no significant effect on weight loss. Further investigations showed that EGT inhibited the activities of polyphenol oxidase (PPO), peroxidase (POD), phenylalanine ammonia lyase (PAL), catalase (CAT), and browning-related gene expression level, including *AbPPO1*, *AbPPO3*, *AbPPO5*, *AbPAL1* and *AbPAL2*. The results from this research indicated that EGT treatment had potential effect on maintaining the postharvest quality and controlling browning in button mushroom.