

# Exogenous application of GABA retards cap browning in *Agaricus bisporus* and its possible mechanism

Aydin Shekari, Rahim Naghshiband Hassani and Morteza Soleimani Aghdam

Postharvest Biology and Technology, Volume 174, April 2021, 111434

---

## Abstract

In this study, the effect of exogenous  $\gamma$ -aminobutyric acid (GABA) at 0 (control), 0.01, 0.1, 1, and 10 mM on cap browning and quality of button mushrooms during 15 d of storage at 4 °C was investigated. GABA at 0.1 mM yielded the lowest cap browning. Weight loss, electrolyte leakage, and malondialdehyde (MDA) content were significantly lower in mushrooms treated with 0.1 mM GABA, while their firmness was higher. The increased accumulation of total phenolic compounds in the 0.1 mM GABA treated mushrooms was associated with a higher expression and activity of phenylalanine ammonia-lyase (PAL) accompanied by a lower expression and activity of polyphenol oxidase (PPO). GABA treatment was capable of reducing  $H_2O_2$  content and increasing ascorbic acid (AsA) content. Exogenous GABA increased the endogenous GABA content by increasing the expression of the glutamate decarboxylase (GAD) gene and decreasing the expression of the GABA transaminase (GABA-T) gene. Overall, GABA treatment could be employed for retarding cap browning and maintaining the sensory and nutritional quality of button mushrooms during cold storage.