

# Mechanism underlying sodium isoascorbate inhibition of browning of fresh-cut mushroom (*Agaricus bisporus*)

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## Abstract

The effect of sodium isoascorbate (SI) on the browning of fresh-cut mushrooms was investigated. Results indicated that fresh-cut mushrooms treated with  $10 \text{ g L}^{-1}$  SI exhibited increased firmness, decreased weight loss, a lower respiration rate, a lower degree of browning, and lower polyphenol oxidase and tyrosinase activity, over 12 d of storage, relative to untreated mushrooms. The exogenous SI treatment also delayed a decline in total phenolics, total flavonoids, gallic acid, and catechin, decreased electrolyte leakage, as well as lowered levels of MDA and reactive oxygen species. The levels of ascorbic acid and glutathione, and antioxidant enzyme activity (superoxide dismutase, catalase, ascorbate peroxidase and glutathione reductase) were also enhanced in  $10 \text{ g L}^{-1}$  SI-treated fresh-cut mushrooms. Collectively, results indicate that a  $10 \text{ g L}^{-1}$  SI treatment induces a series of antioxidant responses in fresh-cut mushrooms that inhibits browning and maintains overall quality. The prescribed treatment could be used to prolong the shelf life of fresh-cut mushrooms.