

Title Comparison of the antioxidant enzymes of broccoli after cold or heat shock treatment at different storage temperatures

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Abstract

An experiment was conducted to study the association between cold shock treatment (CST) (0 °C, 1 h) and heat shock treatment (HST) (55 °C, 30 s) on antioxidant enzymes of broccoli at different storage temperatures (20, 10, or 5 °C). There was no difference in antioxidant enzyme activities between CST and HST under storage at 20 °C; superoxide dismutase (SOD) and catalase (CAT) activities were increased in comparison with the controls. However, activities of antioxidant enzymes, except for ascorbate peroxidase (APX), with CST were higher than those with HST during storage at 10 °C, while there were opposite results except for CAT activity at 5 °C. These results suggest that CST and HST have the same effect on the antioxidant enzymes of broccoli during 20 °C storage, but have different effects at below 10 °C, which become more pronounced as the temperature is lowered.