

Title Reduced internal browning in pineapple fruit by 1-Mep pretreatment and the antioxidant response

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Abstract

The objective of this study was to determine the involvement of 1- MCP on reducing internal browning and antioxidant systems in Phulae pineapple fruit under chilling stress. Phulae pineapple at 25% yellow peel stage were pre-treated with different concentrations of 1-MCP (100, 200, and 400 nL·L⁻¹) for 16 h, at 25°C, and non-treated fruit were used as the control. Fruit were packed in corrugated boxes and stored at 10°C, 90-95% RH, for 30 days. The internal browning symptom was first observed in the control treatment after 20 days of storage while pretreatment with 200 nL·L⁻¹ of 1MCP significantly reduced the percentage of internal browning in Phulae pineapple fruit. The changes of peel colour and total soluble solid (TSS) was delayed by 1-MCP treatment. Hydrogen peroxide (H₂O₂) superoxide dismutase (SOD), and ascorbate peroxidase (APX) increased during storage and their changes were not significantly affected by different concentration of 1-MCP treatment. The activity of catalase (CAT) was higher in 200 nL·L⁻¹ of 1-MCP than other concentrations until 10 days of storage. Glutathione content was significantly higher in fruit pre-treated by 200 nL·L⁻¹ of 1-MCP than in fruit pre-treated with other concentrations throughout storage. These results suggest that 200 nL·L⁻¹ of 1-MCP could increase chilling resistance in Phulae pineapple fruit by regulating glutathione metabolism.