

Title Reduced chilling injury in cucumber by nitric oxide and the antioxidant response
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Abstract

Cucumber fruit were pre-treated with $25 \mu\text{l l}^{-1}$ nitricoxide (NO) for 12 h at 20°C , and then stored at $2 \pm 1^\circ\text{C}$ and 95% relative humidity for 15 days. Chillinginjury index, membrane permeability, lipid peroxidation, superoxide anion O_2^- production rate, H_2O_2 content, activities of superoxide dismutase (SOD), catalase (CAT), ascorbate peroxidase (APX), peroxidase (POD), and DPPH-radical scavenging activity were measured. The results showed that the application of NO at $25 \mu\text{l l}^{-1}$ was most effective in reducing CI in cucumber fruit. The treatment reduced the increases in membrane permeability and lipid peroxidation, delayed the increases in both O_2^- production rate and H_2O_2 content. The NO-treated fruit exhibited significantly higher activities of SOD, CAT, APX and POD and higher DPPH-radical scavenging activity than control fruit during the storage. The overall results suggest that NO enhanced chilling tolerance in cucumber fruit by improving the antioxidative defence system.