Title Effect of exogenous glycine betaine on oxidation metabolism in cucumber at cold storage

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Abstract

Glycine betaine (GB) are of stress tolerance in plants, including water, salt, drought, or freezing stresses, etc. Coldtolerance were observed in postharvest fruit with exogenous GB. The aim of this work was to investigate the effect of GB treatments on oxidative metabolism of cucumber (*Cucumis sativus* Linn. Cv. 'Zhongnong 8'. The fruits were immersed in the GB solutions at 0, 5, 10 or 15 mmol L^{-1} for 15 min, dried, and stored for 12 days at 4°C. The changes of a few parameters related to oxidative metabolism were measured during storage. The results showed that the activities of lipoxygenase (LOX) were decreased in the fruits with GB in a various extent. The activities of peroxidase (POD) and catalase (CAT) were enhanced significantly by the GB treatments, whereas the contents of hydrogen peroxide (H_2O_2) were eliminated. The malondialdehyde (MDA) accumulation was restrained. GB at 10 mmol L^{-1} was distinguished among the 3 concentrations. The GB contents increased by exogenous GB treatments, which ordered as 0 <5 <10 <15 mmol L^{-1}. This research indicated that exogenous GB might weaken the oxidation of unsaturated fatty acids, strengthen the dissimilation of active oxygen species, therefore decrease the MDA accumulation, which ought to contribute the stress tolerance in chilled fruits.