Title Effects of a phospholipase D inhibitor on postharvest enzymatic browning and oxidative stress of litchi fruit

Author Jian Sun, Xiangrong You, Li Li, Hongxiang Peng, Weiqiang Su, Changbao Li, Quanguang He and Fen Liao

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Abstract

Membrane lipid degradation catalyzed by phospholipase D (PLD) results in postharvest browning and senescence of litchi fruit. The effects of *n*-butanol, a specific PLD inhibitor, on enzymatic browning and oxidative stress during storage of litchi fruit at room temperature were evaluated. *n*-Butanol-treated fruit had a lower browning index and disease index than untreated fruit. *n*-Butanol treatment also decreased PLD activity. As a result, the decompartmentalization of litchi polyphenoloxidase and substrates was reduced. The conversion of substrates (−)-epicatechin and procyanidin A_2 into quinones was slowed down and enzymatic browning of litchi pericarp tissues was lower after 6 d storage. Additionally, *n*-butanol-treated fruit possessed significantly lower malondialdehyde contents than untreated fruit after 4 d storage. Analysis of antioxidative enzyme activities showed that *n*-butanol treatment inhibited oxidative stress mainly by maintaining high catalase activity in litchi pericarp tissues. Consequently, senescence of litchi fruit during storage was moderated.