

Title Oxidative behaviour of fresh-cut 'Fuji' apples treated with chemical stabilizers
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Abstract

In this work, apples (*Malus domestica* L. 'Fuji') were minimally processed and treated with commercial products generally used to prevent browning, softening and diseases. The oxidative behaviour of fresh-cut apples was assessed during cold storage determining the changes in levels of hydrogen peroxide (H₂O₂), peroxidation, and changes in the activity of antioxidant enzymes; superoxide dismutase (SOD, EC 1.15.1.1), catalase (CAT, EC 1.11.1.6), and peroxidase (POX, EC 1.11.1.7). Immediately after treatment, the samples treated with the antioxidant mixture (ascorbate + cysteine) exhibited a sharp increase in H₂O₂ levels and higher levels of peroxidative damage, especially at the beginning of the storage period. In line with this result, the treated fruits also exhibited a significant decrease in POX activity, but no significant changes in SOD and CAT activity during the first days of storage. H₂O₂ accumulation was not due to the action of cysteine but attributable to a specific action of ascorbate, which acted as a pro-oxidant under these conditions. Collectively, the results presented in this work showed that the commercially available antioxidant mixture generally used to prevent browning in fresh-cut apples may cause important oxidative damage. New alternatives are therefore required to prevent the detrimental loss of texture resulting from this oxidative action.