

Title The study on some physiological and biochemical indexes about section-drying of Satsuma mandarin in later preservation stage

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Abstract

Citrus unshiu Marcov. Satsuma was used to study the contents of different kinds of correlative enzymes, malondialdehyde (MDA), electric conductivity of peel, relative electrical conductivity (REC), respiratory rate and changes in later preservation stage. The results showed that both peroxidase (POD) enzyme activities of healthy and Section-drying peel increased significantly with preservation time prolonged, moreover, the enzyme activity was always higher than that of healthy peel. The POD enzyme activities in healthy and Section-drying peel increased to $64.92 \text{ (}\mu\text{g}\cdot\text{g}^{-1}\text{FW}\cdot\text{min}^{-1}\text{)}$, $70.90 \text{ (}\mu\text{g}\cdot\text{g}^{-1}\text{FW}\cdot\text{min}^{-1}\text{)}$ respectively, the changes trend of respiration rate, MAD content, peel relative electrical conductivity were consistent with POD enzyme activity. The changes trend of various enzymes activities and MDA content in the flesh were consistent with peel, but not significant. Enzymes activities of pectin methylesterase (PME), ascorbic acid oxidase (AAO) and catalase (CAT) decreased significantly with preservation time prolonged, the PME activity was always higher than that of healthy peel, while CAT activity was on the contrary. PME activity in healthy and Section-drying peel decreased to $31.62 \text{ (U}\cdot\text{g}^{-1}\text{FW}\cdot\text{min}^{-1}\text{)}$, $39.03 \text{ (U}\cdot\text{g}^{-1}\text{FW}\cdot\text{min}^{-1}\text{)}$ respectively, and AAO activity in healthy and Section-drying peel decreased to $0.0058 \text{ (mg oxidatedV}_c\cdot\text{g}^{-1}\text{FW}\cdot\text{min}^{-1}\text{)}$, $0.0040 \text{ (mg oxidatedV}_c\cdot\text{g}^{-1}\text{FW}\cdot\text{min}^{-1}\text{)}$ respectively. We can guess that CAT, AAO activities were inhibited due to the increase of MDA content, which led to membrane lipids peroxides intensified, peel cell structures were destroyed, aerobic respiration was promoted, made respiration rate increased. The relations between POD activity and Section-drying were uncertain. So, it was suggested that Occurrence of Section-drying was result of senescence.