

Title Studies on relationship between postharvest biochem-physiology and peel pitting of Jincheng orange in the Middle and Later Periods of storage experiment

Author Li CM, Wang RK, Hao CM, Zhou L and Han AH

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Abstract

Jincheng orange is used as the experimental material. By comparing the tendency of index changes of biochem-physiology and enzyme activity related to healthy fruit and peel pitting fruit in the middle and later periods of storage experiment, the relationship between indexes and peel pitting of Jincheng is discussed. The results showed that the AAO content of healthy fruit and the AAO and CAT content of pitting fruit decreased significantly, which are reduced by 0.00672 (mg H₂O₂·g-1FW·min⁻¹) 0.00367 (mg oxidatedVC·g-1FW·min⁻¹) and 0.018488 (mg H₂O₂·g-1FW·min⁻¹), while the CAT content of healthy fruit has no obvious change; The POD contents both in healthy fruit and pitting fruit are increased significantly, which are respectively increased to 52.71 (ug·g-1FW·min⁻¹) and 97.25167 (ug·g-1FW·min⁻¹). And it is proved that the POD content of pitting fruit is obviously higher than that of healthy fruit, but the AAO content is opposite; The change trend of respiratory intensity, relative electrical conductivity (REC) and the MDA and PPO content in peel pitting fruit is consistent with that of the POD content. The PPO content comes up to 0.008861 (mg oxidatedVC·g-1FW·min⁻¹), which is about twice than that in healthy fruit. Ethanol content both in healthy fruit and pitting fruit rises, while the ethanol content in juice of pitting fruits decreases remarkably; Total Phenols content in pitting fruits significantly reduced by 1045.95 (ug/ml), while the content in healthy fruit significantly increased to 2048.3 (ug/ml). it is estimated that the activity of CAT, AAO is suppressed due to the distinct rise of MDA in healthy fruit in the middle and later periods of storage. The rise of MDA promotes an increasing rise of Relative Electrical Conductivity (REC), accelerate senescence of cell membrane structure and causes generation of the peel pitting which accelerate senescence of peel of Jincheng in the middle and later periods of storage. Meanwhile, the contents of PPO, POD, Total Phenols and peel pitting showed positive correlation; The rise of the content of Ethanol was related to the change of respiratory intensity.