

CHAPTER 6

Conclusion

The present study has proven the involvement of redox status in energy production (NAD^+/NADH and Q/QH_2 ratios) and in free radical scavenging (ASA/DHA , GSH/GSSG and $\text{NADPH}/\text{NADP}^+$ ratios) in fruit senescence of longan cv. Daw during storage at $25\pm 1^\circ\text{C}$ and $82\pm 5\%$ relative humidity. In energy production, the redox imbalance down-regulated respiratory enzyme activities, SDH and CCO, resulting in low energy production. Moreover, in free radical scavenging, the imbalance in redox state caused down-regulation of ASA-GSH cycle enzyme activities, APX, MDHAR, DHAR and GR, resulting in ROS accumulation. These changes caused longan fruit senescence during storage.

Fumigation with $5\text{-}25\text{ mg L}^{-1}$ ClO_2 for 10 minutes maintained NAD^+/NADH , Q/QH_2 , ASA/DHA , GSH/GSSG and $\text{NADPH}/\text{NADP}^+$ ratios. In energy production, the higher in redox state up-regulated the respiratory enzyme activities producing more energy. It also up-regulated the ASA-GSH cycle enzyme activities resulting in ROS reduction. These combined effects delayed senescence during the storage period.

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