

Inhibitory effect of propyl gallate on pulp breakdown of longan fruit and its relationship with ROS metabolism

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Abstract

An excessive ROS accumulation in harvested longan (*Dimocarpus longan* Lour.) fruit could promote the pulp breakdown and lower the fruit quality. To solve this problem, the influence of propyl gallate, one kind of ROS scavenger, on the ROS metabolism in pulp of postharvest longans and its connection with the breakdown occurrence of longan pulp were investigated. Contrasted to control samples, the propyl gallate-treated group manifested a lower index of pulp breakdown, MDA content, and production rate of O_2^- ; but higher gene expression levels of *DISOD*, *DICAT* and *DIAPX*, higher SOD, CAT and APX activities, higher levels of AsA, flavonoid, GSH and total phenolics, and higher ability of scavenging free radicals. These results revealed that propyl gallate inhibited longan pulp breakdown occurrence, which was because propyl gallate enhanced the ROS scavenging ability and reduced ROS generation and accumulation in longan pulp. These activities involved alleviating the oxidative damage of cell membrane and the peroxidation of membrane lipid in longan pulp, which maintained the structural integrity of longan pulp cell membrane and suppressed the pulp breakdown occurrence in postharvest longan fruit.