Melatonin enhanced chilling tolerance and alleviated peel browning of banana fruit under low temperature storage

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Abstract

The effect of melatonin on chilling injury of banana fruit was investigated. Results showed that melatonin treatment delayed chilling injury and alleviated peel browning. Melatonin treatment increased the contents of phospholipids and unsaturated fatty acid, induced the reactive oxygen species (ROS) scavenging enzyme activities, and reduced the contents of H_2O_2, $O_2^{-\bullet}$ of banana fruit. It also induced the miR528 expression, resulting in the down expression of the potential target genes of *MaPPO1*, *MaPPO2* and *MaPPO3*, and inhibited the PPO activities. Moreover, the phenolic compounds in melatonin treated banana fruit peel were quantitatively analyzed by liquid chromatography-tandem mass spectrometry (UPLC-MS/MS). The results indicated that melatonin treatment changed the contents of 63 polyphenolics in banana fruit, and by which involved in delaying chilling injury and alleviating peel browning. In conclusion, melatonin treatment is a potential technique in alleviating chilling injury of banana fruit under low temperature storage.