

# Alleviation of pericarp browning in harvested litchi fruit by synephrine hydrochloride in relation to membrane lipids metabolism

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## Abstract

This study investigated the effect of synephrine hydrochloride (Syn-HCl) on litchi pericarp browning and the potential regulating mechanism. Results showed that 0.5 g L<sup>-1</sup> Syn-HCl significantly inhibited the development of pericarp browning. Compared to control, Syn-HCl treatment reduced malondialdehyde and H<sub>2</sub>O<sub>2</sub> content and inhibited activities of polyphenol oxidase (PPO) and peroxidase (POD). Meanwhile, Syn-HCl-treated litchi fruit exhibited higher amounts of USFA (unsaturated fatty acids) as well as lower amounts of SFA (saturated fatty acids) through regulating activities of membrane lipids-degrading enzymes: lipase and lipoxygenase. Additionally, higher ratio of USFA to SFA and double bond index were shown in Syn-HCl-treated fruit. Further analysis showed that key genes involved in fatty acid synthesis were also regulated by Syn-HCl treatment. Taken together, these findings indicated that Syn-HCl alleviated litchi pericarp browning resulting from regulation of fatty acid metabolism and maintenance of membrane integrity, which inhibited the enzymatic browning caused by PPO and POD.