

Apple polyphenols delay senescence and maintain edible quality in litchi fruit during storage

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Abstract

The present study evaluated the impacts of exogenous apple polyphenols (AP) treatment on senescence-related physiological characteristics and edible qualities in ‘Dingxiang’ litchi fruit during storage at ambient temperature (25°C). The results exhibited that 5 g L⁻¹ AP treatment effectively delayed the development of litchi pericarp browning, and browning indices from 4 to 8 in AP-treated fruit averaged 40% lower than those in control fruit. AP treatment reduced the respiration rate and weight loss in litchi fruit during storage. AP application to litchi fruit slowed the changes in glucose and fructose contents while inhibiting the decline in sucrose. AP treatment also resulted in higher contents of organic acids (malic acid, citric acid, succinic acid, and tartaric acid), phenolic compounds (caffeic acid, chlorogenic acid, (+)-catechin, (-)-epicatechin, rutin and total phenolics), ascorbic acid and glutathione, consequently contributing to maintenance of flavor and nutritional quality in litchi fruit. Moreover, compared to control fruit, AP treatment improved antioxidant capacity in litchi fruit, as indicated by higher DPPH radical-scavenging activity and ferric ion reducing antioxidant power (FRAP). The findings suggest that AP application could be a promising postharvest strategy to delay senescence and maintain edible quality of litchi fruit.