

Polyphenol treatment delays the browning of litchi pericarps and promotes the total antioxidant capacity of litchi fruit

Xin-yu Bai, Zi-meng Yang, Wan-jun Shen, Yuan-zhi Shao, Jiao-ke Zeng and Wen Li

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Abstract

Rapid pericarp browning is the leading factor for quality deterioration and marketing decline of litchi fruit. In the present study, litchi fruit was treated with phenolic compounds, proanthocyanidin, *p*-coumalic acid, chlorogenic acid, apple polyphenol, and tea polyphenol, before being stored at 20°C for 10 d. Phenolic compound treatment delayed pericarp browning and weight loss, reduced respiration rate, and maintained high total acid levels and vitamin C content in litchi fruit. Subsequently, the key antioxidant characteristics were determined to evaluate the effects of phenolic compounds on the antioxidant system during pericarp browning. The phenolic compound-treated fruit exhibited higher levels of antioxidant enzymes, anthocyanins, total phenols, flavonoids, and antioxidant capacity, as well as a lower superoxide radical production rate and polyphenol oxidase and peroxidase activities during whole-fruit storage than the control. Of the five treatments, proanthocyanidin application produced the most significant effects; therefore, this may be the best method for inducing antioxidant system-related factors, enhancing antioxidant capacity, and delaying pericarp browning in litchi.