Hydrogen-rich water maintains the color quality of fresh-cut Chinese water chestnut

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Abstract

Chinese water chestnut is an important cultivated corm vegetable in South China. The present study was carried out to investigate the effect of application of exogenous hydrogen-rich water (HRW) on yellowing inhibition of fresh-cut Chinese water chestnut during storage at 4 °C. The results exhibited that the HRW treatment effectively delayed the yellowing of fresh-cut Chinese water chestnut. The treatment reduced greatly the H_2O_2 accumulation and lipoxygenase activity but enhanced the superoxide dismutase activity. Furthermore, the HRW treatment slowed down the accumulation of flavonoids and transcript levels of phenylpropanoid pathway genes and MYB transcription factor of fresh-cut Chinese water chestnut. Taken together, these results exhibited that HRW treatment effectively attenuated the oxidative damage and inhibited the activation of phenylpropanoid pathway, and, thus, slowed down the accumulation of flavonoids, which eventually reflected in the delay in yellowing of fresh-cut Chinese water chestnut during storage.