Title Effects of short-term anoxic treatment on antioxidant ability and membrane integrity of postharvest kiwifruit during storage

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Abstract

Kiwifruits were exposed to pure N_2 gas for 6 h, then stored at 1 ± 1 °C and 95–100% relative humidity for 35 days and finally held for 3 days at 20 °C. Fruit firmness, membrane permeability, thiobarbituric acid reactive substances (TBARS) and H_2O_2 contents, superoxide anion (O_2^-) production rate and activities of lipoxygenase (LOX), superoxide dismutase (SOD) and peroxidase (POD) were measured. Short-term N_2 treatment maintained a high level of firmness within 14 days at low temperature and reduced the decrease in the firmness during shelf-life. Furthermore, the treatment reduced the increases in membrane permeability and lipid peroxidation, delayed the increases in both production rate O_2^- and H_2O_2 content, increased activities of SOD and POD but reduced LOX activity throughout storage period. These data indicate that the delay in the firmness of kiwifruit by the short-term N_2 treatment could be due to reduced lipid peroxidation, enhanced antioxidant ability and membrane integrity maintenance.