

Title The relationship between senescence and Ca^{2+} -ATPase activity of microsomal membrane and lipid peroxidation in postharvest peach fruits

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Abstract

Peach (*Prunus persica sieb et Zucc*) cultivars generally fruit soften rapidly, within a few days of harvest if maintained at ambient temperature. In this study, measurement of Ca^{2+} -ATPase activity of microsomal membrane and lipid peroxidation was used to investigate their correlation with postharvest senescence in the peach cultivar 'Yingging' when maintained at high (25°C) or low (4°C). Fruit stored at 4°C were firmer, had lower rates of respiration and ethylene production had those stored at 25°C ; they also generated a higher and late peak of Ca^{2+} -ATPase activity that was maintained thereafter; this was concomitant with a lower ratio of super oxygen radical (O_2^-) production to malondialdehyde (MDA) content, a product of membrane lipid peroxidation. The Ca^{2+} -ATPase inhibitors, sodium orthovanadate (SO) and Erythrosin B (EB), increased respiration rate, but only had a slight effect on ethylene production. It suggested that the slow rate of senescence at 4°C was closely related to the higher peak value and longer duration of high Ca^{2+} -ATPase activity in microsomal membranes, together with the lower membrane lipid peroxidation and O_2^- production rates in cold stored peach fruits.