

Storage temperature dependence of biosynthesis of aroma volatile compounds and consumer acceptability in 'Rich Lady' peaches

A. Ortiz, G. Echeverría, J. Graell, M.L. López, I. Lara

Acta Horticulturae 962: 531-537. 2012.

Abstract

'Rich Lady' peaches were harvested at commercial maturity and stored at 20, 12, 4 or -0.5°C for up to three weeks, with the general purpose of broadening the understanding of storage temperature influence on the development of fruit flavour, a major quality attribute. Stored fruit were analysed weekly for the emission of aroma volatile compounds, activity of some volatile-related enzymes and sensory acceptance. Fruit kept at 12°C for 7 or 14 days received higher acceptance scores than samples stored at 4 or -0.5°C, while no significant differences among temperatures were observed after storage for three weeks. Higher acceptance scores were associated mainly to perception of characteristic "peach" flavour, which in turn was strongly correlated to higher emission of most aroma volatile compounds detected. Accordingly, the highest production of volatile esters corresponded to fruit stored at 12°C for 7 days, although no significant differences were found for alcohol o-acyltransferase (AAT) activity, the enzyme responsible for the production of volatile esters by fruit tissues. Contrarily, temperature-dependent differences in AAT activity were observed after longer storage periods. These data suggest an important role for substrate supply to the esterification reaction catalysed by AAT, and indeed significant changes in the activity of some precursor-providing enzymes (lipoxygenase and hydroperoxide lyase) were found as a function of storage temperature of produce.