

Effects of under-water cutting treatments on oleocellosis development, quality and shelf-life of minimally processed Persian lime fruit

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Abstract

The main problem for minimally processed acid limes commercialization is oleocellosis, a physiopathy generated on the surface of the fruit by the release of essential oils from flavedo's oil glands due to processing, which causes sinking of the tissue, necrosis and loss of product quality. In order to reduce this problem, we evaluate the effect of underwater cutting (UWC), either alone or in combination with other chemicals treatments on the development of oleocellosis and quality of minimally processed Persian lime.

Persian lime fruit was cut into 8 wedges inside a refrigerated chamber at 10 °C under water (UWC) at 4 °C (control) or UWC with calcium lactate (5%) and 4-hexylresorcinol (4HR, 1 mM), either alone or in combination. The obtained minimally processed Persian lime fruit were washed, disinfected and stored in crystal clear polystyrene clam shells at 7.5 °C for 10 d. Visual quality and physicochemical parameters were determined. UWC + calcium presented the lowest levels of dehydration, weight loss, lipid peroxidation and the minimum damage at the cutting surface, showing to be the best treatment for minimally processed Persian lime reaching 10 d of shelf life and retaining marketable quality.