

Ethylene degreening treatment under commercial conditions does not cause loss of nutritional and aroma quality of citrus fruit

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Abstract

The major part of Spanish citrus fruit production is commonly submitted to degreening with ethylene exposure and is then stored under cold quarantine conditions to be exported to overseas countries. Many studies reported the effects of postharvest application of ethylene on internal quality properties of the edible part of the citrus fruit. Nevertheless, information about the effect of degreening and quarantine treatments on their nutritional and aroma volatile compositions is scarce. In the present study, the effect of degreening with and without ethylene application followed by cold quarantine treatment on vitamin C, hesperidin, narirutin, didymin, sinensetin, nobiletin, tangeretin contents as well as antioxidant activity of ‘Navelina’ oranges and ‘Clemenules’ and ‘Oronules’ mandarins was investigated. The levels of ethanol, acetaldehyde, ethyl butanoate, hexanal, α -pinene, myrcene, ethyl hexanoate, octanal, limonene, linalool, nonanal and decanal compounds were also determined. These postharvest conditions did not induce dramatic changes of nutritional and aroma quality of fruit. On the other hand, the response to degreening process and the posterior quarantine treatment depended on the cultivar. Although some changes were observed in individual flavonoids compounds of ‘Clemenules’ mandarins and ‘Navelina’ oranges, degreening with and without ethylene exposure followed by cold quarantine storage had no impact on their nutritional and aroma compounds. Nevertheless, ‘Oronules’ mandarins showed the highest response to ethylene exposure and quarantine treatment with an increase in the level of flavonoids components as well as the level of some volatile compounds.