

# Effect of temperature during and immediately after CO<sub>2</sub>-deastringency treatment on internal flesh browning after cold storage of persimmon fruit

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## Abstract

Currently, a major cause of postharvest loss of 'Rojo Brillante' persimmon, the variety mainly cultivated in the Mediterranean Region, is 'internal flesh browning' manifestation after storage or shipping at low temperature, whose causes remain unknown. 'Rojo Brillante' is an astringent low temperature-sensitive cultivar. Thus fruit is routinely submitted to high CO<sub>2</sub> treatment to remove astringency, and also to 1-MCP treatment before being stored to retard flesh gelling and drastic softening, the main chilling injury symptoms. This study investigates the influence of temperature during CO<sub>2</sub> deastringency treatment and immediately after its application on the incidence of 'internal flesh browning' in persimmon fruit. Our results revealed for the first time that the temperature immediately after the CO<sub>2</sub> deastringency treatment was the main factor implied in this alteration. The fruit transferred directly to cold storage after the CO<sub>2</sub> treatment showed 'internal flesh browning' after 41 storage d at 1 °C, while a 24-hour attemperation period at 20 °C before storage prevented this disorder from appearing. The main effect of the attemperation period was the enhanced release of CO<sub>2</sub> from fruit after the CO<sub>2</sub> treatment, which resulted in less acetaldehyde (ACh) accumulating after 24 h. Moreover, the temperature of the CO<sub>2</sub> application was observed to influence 'internal flesh browning' severity as ACh accumulated at higher concentrations in the fruit treated at 20 °C than at 12 °C. Our preliminary hypothesis is that ACh can act as a precursor of reactive oxygen species that would be implied in this disorder's development.