Biochemical analyses and expression of cold transcription factors of the late PDO ‘Calanda’ peach under different post-harvest conditions

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Abstract

The peach of the designation of origin ‘Calanda’ that is much appreciated in the Spanish market for its high fruit quality, is produced from a few very late ripening traditional cultivars. We characterized the organoleptic, nutritional and post-harvest quality of the ‘Calanda’ cultivars ‘Calante’ and ‘Calprebor’ following different harvest dates. The expression profile of genes associated with cold storage and chilling induction was studied under different post-harvest treatments in the two cultivars. Organoleptic and physicochemical damage were more severe under storage at 5 °C than at 1 °C. The ‘Calante’ peaches showed less severity of chilling injury damage, better skin color, and higher phenolic content during cold storage, whereas the ‘Calprebor’ peaches showed greater firmness and higher glucose and fructose content during the post-harvest treatment. Cold transcription factors, *CBF*, and *bZIP*, increased cold storage and chilling injury resistance in the ‘Calante’ peaches. In addition, expression of *GST22* may also promote resistance against cold damage, contributing to a higher firmness and phenolic content.