

Title Comparison of the effect of cold storage on the antioxidant and ethylene metabolism in non-acids and stand nectarine cultivars

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Abstract

Recently new non-acids cultivars of nectarine have been implanted in the Lleida growing area. These cultivars are appreciated, for their high sugar content and low acidity, but also because they exhibit different pattern of ripening on orchard and after short cold storage. The reason of this different behaviour is not known. The main aim of this work was to better understand the physiology of non-acids nectarines in comparison to standard cultivar. Different experiments in which we compared the ethylene metabolism and the antioxidant metabolism of 'Nectagalacov' (non-acid cultivar) and 'Orioncov' nectarine (standard cultivar) were carried out. In these experiments we analysed the changes of ethylene production, levels in 1-aminocyclopropane 1-carboxylic acid (ACe), manoil-1-aminocyclopropane 1-carboxylic acid (MACe), H₂O₂ content, and in the activity of SOD, CAT and POX enzymes after 1,4,7 and 15 days in cold storage. Immediately after harvest the two cultivars exhibited different pattern in ethylene metabolism and it is the non-acid cultivar that produced the higher amounts of ethylene. This behaviour was confirmed on stored fruit after removal. However, the changes of ethylene production were not related to changes in ACC levels that appear to be no limiting. Significant differences were found for H₂O₂ levels and POX on a short term basis and for CAT during all the storage duration between cultivars. Although these differences in oxidative behaviour may explain at least in part the changes in ripening behaviour between cultivars, other biochemical factor is likely involved.