

Title How does cold storage affect the bioactive compounds and antioxidant capacity in plum cultivars?

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Citation Abstracts Book, 6th International Postharvest symposium, 8-12 April 2009, Antalya, Turkey. 256 pages.

Keyword Antioxidant; plum; cold storage

Abstract

Cold storage is commonly used as the main postharvest technology to maintain organoleptic fruit quality, although the change occurring on the bioactive compounds have been less afforded. In this study, the evolution of the bioactive compound (phenolics, anthocyanins and carotenoids) and antioxidant capacity (AOC) was evaluated at commercial harvest (CH) and during cold storage and subsequent shelf life in eight plum cultivars, both dark-purple and yellow types. In addition, samples were kept, on tree to analyse these parameters one week after CH. At harvest, differences exist in the bioactive compounds and AOC among cultivars in both peel and pulp, the concentration being higher in the peel than in the flesh. During cold storage, a general increase was found for total phenolics, anthocyanins and carotenoids, which influenced the AOC, since hydrophilic-AOC (H-AOC) was correlated to both phenolics and anthocyanins, while lipophilic-AOC (L-AOC) was correlated to carotenoids. Then, carotenoids and phenolics (and among them the anthocyanins) could be the main lipophilic and hydrophilic compound contributing to L-AOC and H-AOC, respectively. Interestingly, the reached values of the bioactive compounds in those fruits left on tree one week after CH were significantly higher than those obtained after 35 days of cold storage + 4 days of shelf-life at 20°C. In conclusion, the cold storage did not affect negatively to the bioactive compounds although the best way to keep high the antioxidant potential of the plum was to delay the harvest date one week with respect to CH.