

Changes in the carotenoids profile of two yellow-fleshed kiwifruit cultivars during storage

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Abstract

Carotenoid level in fruit changes dynamically in response to storage condition, however, the underlying mechanism remains unclear. Here, we investigated the carotenoid profiles and associated gene expression to reveal its responses to different storage temperature (20 °C and 4 °C) in two kiwifruit cultivars, bright-yellow-fleshed Jinshi 1 and pale-yellow-fleshed Jinyan. At harvest, four main carotenoids were detected in cv. Jinshi 1, while only three in cv. Jinyan, excluding β -cryptoxanthin, which accounted for the majority of carotenoids in 'Jinshi 1'. Storage at 20 °C increased content of the total carotenoid and β -carotene in both cultivars, and up-regulated the expression of biosynthesis gene *PSY*, but down-regulated the expression of carotenoid degradation genes *CCD1* and *NCED1*. It also induced β -cryptoxanthin and α -carotene production in Jinyan at later stage. On the contrary, storage at 4 °C decreased total carotenoid content, but induced the expression of carotenoid biosynthetic gene *PDS*, *LCYB*, *LCYE*. These results suggested expression of *PSY*, *CCD1* and *NCED1* plays an important role in improvement of carotenoids level at 20 °C. Furthermore, high proportion of β -cryptoxanthin might contribute to yellower flesh in Jinshi 1.