

Differential responses of fruit quality and major targeted metabolites in three different cultivars of cold-stored figs (*Ficus carica* L.)

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Abstract

Fig fruit are highly perishable after harvest. To elucidate the relationship between fruit physiological performance and major targeted metabolites during cold storage, fig fruit of three major cultivars, 'Masui Dauphine', 'Bongresi', and 'Banane', were stored at 0.5 °C for up to 30 d, followed by 1 d at 20 °C. Fruit fresh weight loss increased and fruit length and diameter decreased during cold storage, regardless of cultivars. Lightness and chroma from peel and cortex tissues decreased, although differences were detected among cultivars. Hue angle was differently responsive according to cultivars, fruit regions, and tissues. Soluble solids content (SSC), titratable acidity (TA), and the levels of glucose and fructose increased, irrespective of fig cultivars but individual organic acids remained unchanged during cold storage. The contents of aspartic acid and glutamic acid increased, but the levels of other free amino acids decreased, regardless of cultivars during cold storage. The overall heatmap responses were highest at 30 d, compared with the other removal times during cold storage. Principal component analysis (PCA) scores plot indicated the biochemical and physiological fruit responses of the three fig cultivars were clearly separated and diverged based on storage times and cultivars. Based on the results of the PCA loading plot, SSC, TA, glucose, fructose, and fruit fresh weight loss were closely linked with glutamate and aspartate. Therefore, the results indicated the physiological and biochemical responses of fig fruit quality attributes and major targeted metabolites could be affected either by storage duration or by fig cultivar.