Physical and chemical characteristics of three strawberry cultivars during cold storage

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Abstract

The physical and chemical characteristics of 'Shuxiang', 'Tianxiang' and 'Yanxiang' strawberry (*Fragaria × ananassa* Duch.) fruit stored at 0°C for 16 days were investigated. Our research found that the concentration of fructose and glucose did not change significantly, while the sucrose content decreased rapidly during cold storage. The major organic acid in strawberries is citric acid, and with a little L-malic acid and D-malic acid. 'Shuxiang' strawberries showed the lowest concentration of L-malic acid (0.39-0.48 mg g^{-1} FW) and D-malic acid (0.17-0.34 mg g^{-1} FW) among the three cultivars during the whole postharvest period. The total soluble solid content (SSC), titratable acidity (TA) and ratio SSC/TA of 'Yanxiang' fruit showed to be the highest. The 'Yanxiang' fruit contained the highest amount of reducing sugars (3.57-6.37%), pH (3.68-4.01), total ascorbic acid (64.56-39.08 mg 100 g^{-1} FW) and total anthocyanins (15.67-44.08 mg 100 g^{-1} FW), meanwhile it had the lowest free ellagic acid (0.20-0.31 mg 100 g^{-1} FW). The 'Tianxiang' fruit showed the highest concentrations of free ellagic acid (0.56-0.84 mg 100 g^{-1} FW), total phenolic compound (212.31-313.70 mg 100 g^{-1} FW), and 2,5-dimethyl-4-hydroxy-2H-furan-3-one (DMHF) (0.37-0.19 mg 100 g^{-1} FW) for the first 12 days of storage. This cultivar maintained the highest TA (8.62-7.61 mg g^{-1} FW), color value (L^*, C^* and $h°$) during the storage period and the best sensory evaluation.