

Title Antioxidant composition of strawberry fruit in relation to storage temperature and relative humidity

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Abstract

Strawberry (*Fragaria x ananassa*) fruit are good source of phytonutrients, but are fragile and have short storage potential. Fruit are typically stored at low temperatures to maintain quality. However, relatively little is known about the effects of temperature and relative humidity (RH) on antioxidant composition of the fruit. Two studies are reported here, both using the Jewel cultivar. In the first, red ripe fruit were stored in 75, 85 or 95% RH at 0.5, 10 and 20°C for 4 days. In the second, white tip and red ripe fruit were stored in 65 or 95% RH at 3 or 10°C for 12 days. Overall quality declined more rapidly at 20°C, especially at 95% RH, than at 10°C and 0.5°C. Firmness was maintained, or even increased, at 0.5, 10°C more than at 20°C, but soluble solids concentrations were lower at higher than lower storage temperatures. Red color development and anthocyanin concentrations were lower at 0.5, 10°C than at 20°C. Total phenolic compounds were higher at 20°C than at other temperatures at all RHs. Total antioxidant capacity of berries was higher at 10°C than at 0.5°C or 20°C. However, total ascorbic acid concentrations and flavonoid contents, and were not affected by RH and temperature. Red ripe fruit were softer and quality declined faster than white tip fruit. Total anthocyanin contents were lower, while those of total phenolic and flavonoid were higher, in white tip fruit than in ripe red fruit. Overall, across both experiments, high RH environments increased loss of quality at higher storage temperatures. Higher storage temperatures may cause faster ripening and accumulation of antioxidant compounds, but marketable quality may be reduced.