

**Title** Temperature and relative humidity effects on quality, total ascorbic acid, phenolics and flavonoid concentrations, and antioxidant activity of strawberry

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**Citation** Postharvest Biology and Technology, Volume 45, Issue 3, September 2007, Pages 349-357

**Keywords** Strawberry; *Fragaria × ananassa* Duch.; Storage; Quality; Ascorbic acid; Phenolics; Flavonoids; Anthocyanin; Antioxidant activity; Fruit

### Abstract

The physical qualities and antioxidant components of 'Jewel' strawberry fruit stored in 75, 85 or 95% relative humidity (RH) at 0.5, 10 and 20 °C for 4 days were studied. Overall fruit quality declined more rapidly at 20 °C, especially at 95% RH. Weight loss of fruit was negligible for 2 days at all temperatures but it increased at 10 °C in the lowest RH and increased rapidly from day 3 at 20 °C especially with lower RH. Firmness was maintained, or even increased, at 0.5 or 10 °C, while soluble solids concentrations (SSC) decreased at higher storage temperatures. Red color, assessed using chroma, hue and lightness, and anthocyanin concentrations were relatively unchanged at 0.5 or 10 °C but increased rapidly at 20 °C as fruit ripened. Firmness, SSC and color were not affected by RH. Total phenolic compounds were slightly higher at 20 °C than at other temperatures at all RHs. Total ascorbic acid concentrations of the fruit remained similar for the first 2 days of storage, then declined in fruit stored at 0.5 and 20 °C, but remained unchanged at 10 °C at all RHs. Total flavonoid content of fruit did not change over time at all temperatures. The total antioxidant activity of fruit was higher at 10 °C than at 0.5 and 20 °C on day 3, and no effect of RH was detected. In conclusion, while the best temperature for long-term storage is 0.5 °C, quality could be maintained at 10 °C for acceptable periods of time for marketing and may be associated with better nutritional quality.