

Abstract:

Tomato fruit is an excellent source of antioxidants. However, the fruit is sensitive to chilling injury (CI). We have determined the effect of forced hot air treatments on the quality, CI, and the contents of some antioxidants. 'Rhapsody' tomato fruit was exposed to 34°C for 24 h in air, to 38°C for 24 h in air, or to 38°C for 24 h in 5% O₂, all at low RH, and then stored in air at 4°C or 10°C for up to 30 d. Fruit exposed to 38°C at 5% O₂ were injured the most, while fruit that were not heated, and those heated in air at 34°C for 24 h were the least injured. Fruit that were maintained at 10°C and were previously either not heated, or heated at 34°C developed the best color when ripened, having the least chlorophyll and the highest lycopene contents. Color developed slowly at 4°C than at 10°C. β -carotene increased in fruit that were not heated and to a lesser extent in those that were heated in air at 34°C or 38°C. Fruit that were exposed to 38°C in 5% O₂ had lower α -tocopherol content and higher peroxidase, ascorbate peroxidase, superoxide dismutase, glutathione reductase, and glutathione S-transferase activity than fruit of other treatments. We conclude that heating of tomato fruit at 34°C for 24 h caused the least injury and fruit color developed adequately.