

Optimal red light irradiation time to increase health-promoting compounds in tomato fruit postharvest

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Scientia Horticulturae 251: 189-196. (2019)

Abstract

The impact of postharvest red light irradiation via LED modules on the content of health promoting compounds was evaluated on green tomatoes stage 1 exposed to intermittent or continuous irradiation. The first experiment studied the overall effects of different duration periods of red light radiation (darkness, continuous red light for 10 d, continuous red light for 15 d and continuous red light for 20 d) while the second experiment focused on effects of intermittent red light (darkness, red light for 30 min per day, red light for 6 h per day, red light for 12 h per day and continuous red light). In both experiments, tomatoes exposed to darkness served as control. Continuous red light irradiation accelerated ripening of green tomatoes. In addition, continuous red light also significantly increased lycopene, β -carotene, total phenolic content, total flavonoid concentration and antioxidant activity compared to all other treatments, suggesting that continuous red light exposure positively influences metabolic processes and contributes to a higher content of health promoting compounds in tomatoes.