

**Title** Postharvest UV-B irradiation maintains sensory qualities and enhances antioxidant capacity in tomato fruit during storage

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### **Abstract**

Mature-green tomato fruit (*Lycopersicon esculentum* cv. Zhenfen 202) were exposed to different doses of UV-B irradiation (10, 20, 40 and 80 kJ/m<sup>2</sup>) and stored in the dark at 14 °C, 95% RH for up to 37 d. Of the four doses, 20 or 40 kJ/m<sup>2</sup> was most effective in maintaining a high level of firmness and delaying the colour development. Furthermore, 20 or 40 kJ/m<sup>2</sup> promoted the accumulation of total phenolics and total flavonoids, and enhanced antioxidant capacity during storage, though UV-B irradiation could reduce the ascorbic acid content. A dose of 10 kJ/m<sup>2</sup> had similar effects but to a lesser extent. The highest dose of 80 kJ/m<sup>2</sup> resulted in higher lycopene content, but showed negative effects on texture, colour, and other antioxidants. The optimum dose of UV-B for maintaining sensory qualities and enhancing antioxidant capacity was 20 or 40 kJ/m<sup>2</sup>. These results suggest that UV-B irradiation appears to be a useful non-chemical way of maintaining postharvest quality and enhancing antioxidant capacity in tomato fruit.