

1-MCP extends the shelf life of ready-to-eat ‘Hayward’ and ‘Qihong’ kiwifruit stored at room temperature

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Scientia Horticulturae 289: 110437. (2021)

Abstract

Near eating-stage fruit of ‘Hayward’ and ‘Qihong’ kiwifruit (firmness 20 N) were treated with $0.5 \mu\text{L L}^{-1}$ 1-Methylcyclopropene (1-MCP) for 12 h at room temperature ($23 \pm 1 \text{ }^\circ\text{C}$), and then stored at $23 \pm 1 \text{ }^\circ\text{C}$ for several days. Compared with control fruit, 1-MCP greatly delayed loss of firmness, and extended the room-temperature shelf life of ready-to-eat kiwifruit by an extra 8 d (‘Hayward’) or 10 d (‘Qihong’). The 1-MCP treatment also slowed the declines in titratable acidity and color, but had no significant effects on soluble solids content ($p < 0.05$). Although in the 1-MCP treated fruit the amounts of total volatiles increased during room-temperature storage, the concentration of total volatiles was lower in the treated fruit compared with the untreated controls. Treatment with 1-MCP inhibited ester production and aldehyde degradation. At edible firmness, kiwifruit treated with 1-MCP showed similar fruit quality compared with the untreated controls, with similar mean values in soluble solids content, titratable acidity and color ($p > 0.05$). 1-MCP also decreased ethylene production and respiration rate. Moreover, the activities of superoxide (SOD), catalase (CAT) and peroxidase (POD) were increased in the treated fruit compared with the controls. The results indicate treatment with 1-MCP is a potentially effective way of prolonging the room-temperature ($23 \pm 1 \text{ }^\circ\text{C}$) shelf life of ready-to-eat kiwifruit and maintaining their eating quality under commercial conditions.