Postharvest green mold control by hot water dips in kumquats

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Abstract

Kumquats are eaten as a fresh fruit, pulp and peel together. Therefore, non-synthetic products for decay control should be applied. This study was conducted to evaluate postharvest green mold (*Penicillium digitatum*) control by means of alternative methods such as the application of hot water treatments with sodium bicarbonate. Fruit was harvested in Entre Ríos, Argentina, in August 2011. Kumquats were wound-inoculated (0.8 mm long, 0.11 mm in diameter) with a conidia suspension (1×10^6 spores.ml-1) and dipped in water at 20, 45, 50 or 53°C, for 2 min, with or without the addition of 2% sodium bicarbonate and then stored at 20°C, 85-90% RH. The counting of rotted fruit was performed after 12 days. Non-inoculated fruits were waxed after water treatments and stored at 5°C for 34 days (transport simulation) and followed by 20°C for 4 days (shelf-life). Weight loss, firmness and physiological disorders were evaluated. In hot water treatments at 50 and 53°C, more than 75% green mold control was observed. The addition of 2% sodium bicarbonate to the water showed no significant effect in controlling green mold. Weight loss increased with the addition of bicarbonate to the bath and with water temperature. However, no differences in firmness were detected after the trial among treatments. Any hot water treatment did not cause physiological disorders. The use of heat treatments such as hot water dips enables control of green mold in kumquats without altering the quality of the fruit.