

**Title** Hot water rinsing and brushing technology for the fresh-cut industry  
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### Abstract

Hot water rinsing and brushing (HWRB) has been widely used in Israel to clean and disinfect fresh harvested produce since 1996. Naturally infected 'Galia'-type melons, or fruit that were artificially inoculated with non-human *E. coli* were used to evaluate the potential of HWRB technology to clean and disinfect fruit destined for the fresh-cut industry. The fruit were washed and brushed at 20, 58 (commercial treatment) or 75°C for about 20 s, or were soaked in 150 µL/L chlorine for 5 min with subsequent manual brushing. The fruit were then left intact or were peeled and cut into pieces and stored at 8°C or at 17°C for four days or at 5°C for 13 days. External and internal quality parameters and counts of *E. coli* and total aerobic microorganisms on the fresh-cut pieces were evaluated at the end of each storage period. After four days at 8°C, the counts of *E. coli* on fresh-cut pieces prepared from untreated melons were 4 X 10<sup>3</sup> CFU/mm cut, while no *E. coli* were found on flesh pieces from melons that had been washed and brushed at 75°C for 20 s. The counts of *E. coli* found on fresh-cut fruit treated by HWRB at 20°C or 58°C were 6 CFU/mm cut or less than 3 CFU/mm cut, respectively. No *E. coli* were found on the product prepared from the fruit soaked for 5 min. in 150 µL/L chlorine + hand brushing. After four days at 17°C, the total counts of *E. coli* found on the melon flesh were 3 X 10<sup>7</sup>, 4 X 10<sup>6</sup>, 5 X 10<sup>5</sup> and 2 X 10<sup>6</sup> for untreated fruit, 58°C-HWRB-treated fruit, 75°C-HWRB-treated fruit and 150 µL/L chlorine-treated fruit, respectively. Treating melons with HWRB at 75°C for 20 s significantly reduced total microbial counts by 4 logs, compared to a 2.5 log reduction in 58°C-HWRB-treated fruit and 1.5 log reduction in 150 µL/L chlorine-treated fruit, 4 days after treatment. Although, 75°C for 20 s severely damaged the fruit peel if the fruit was left in storage, none of the HWRB treatments affected the taste, aroma, color or firmness of the flesh used for fresh cuts. HWRB is an environmentally friendly technology that is very useful in cleaning and disinfecting melon fruits destined for fresh-cut without affecting quality after processing, if the product is stored at reasonably low temperature after processing. However, the disinfection treatment cannot substitute the need for observing cool chain conditions during distribution and marketing of fresh-cut products.