

**Title** Emerging sanitizers and Clean Room packaging for improving the microbial quality of fresh-cut 'Galia' melon

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### **Abstract**

This study evaluated how traditional or new sanitizers, alone, or in combination with the use of a Clean Room (CR), affected the respiration rate, microbial, nutritional and sensorial quality of fresh-cut 'Galia' melon. Melon pieces were packed in polypropylene trays under passive modified atmosphere (7.4 kPa O<sub>2</sub> + 7.4 kPa CO<sub>2</sub>) and stored up to 10 days at 5 °C. The following treatments were performed: 150 mg/l chlorine (control) for 1 min; 80 mg/l peracetic acid (PAA) for 1 min; ozonated water (0.4 mg/l) for 3 and 5 min. The combinations of: ozonated water and PAA; 150 mg/l chlorine and packaging in CR; ozonated water for 3 min and package in CR; ozonated water for 3 min + PAA and packaging in CR were also studied. Throughout the shelf-life psychrotrophic, mesophilic, *Enterobacteriaceae*, lactic acid bacteria, moulds and yeast growth were determined. The use of PAA provided the lowest microbial load, but this sanitizer decreased the total vitamin C and the antioxidant activity. Nevertheless, the combination of PAA with 0.4 mg/l of ozonated water (3 min) could be a good substitute of use of chlorine. This treatment was effective in reducing the microbial counts, maintaining the antioxidant compounds and respiration rate and maintained the sensorial quality of the product during the 10 days at 5 °C. Treated product packaged in a CR did not show increased treatment effect, probably due to air quality in the laboratory. The use of CR just for the packaging of the melon pieces did not offer any additional advantage. However, the utilization of CR in an industrial environment during all processing steps (from washing to packaging) should be investigated for potential benefits.