

Title Effects of aqueous ozone on quality of minimally processed red bell pepper
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Abstract

One of the main causes of bell pepper decay during storage is microbial contamination. Ozone may be an alternative to traditional sanitizers due to its high reactivity and spontaneous breakdown into non-toxic products. Fresh-cut red peppers were immersed in ozonated (1 ppm) water for 1, 3 and 5 min. Tap water was used as a control. Pepper strips were packaged and sealed in polypropylene trays in air and stored at 10°C for 14 d. Mass loss, gas composition, pH, colour, firmness and microbial quality were evaluated. Mass loss was negligible during storage in all the treatments. Regardless of the treatment and the immersion time, the final concentrations of O₂ and CO₂ were close to 4.5 and 16.2%, respectively. By day 14, pH increased and a significant softening was observed in all the samples, with lower firmness values in fruit washed for 3 and 5 min. At the beginning and the end of the experiment, the ozonated samples were darker than the controls with almost no changes during the shelf-life. Moreover, O₃ did not cause surface discoloration or damage to the peppers. All treatments showed similar initial counts of aerobic mesophilic bacteria. After 14 d of storage, an increase in the counts was observed in all treatments with only slight reductions when washing lasted 3 min. Similar results were observed for yeasts and moulds but, in this case, the highest counts were found when the immersion time in ozonated water was 5 min. However, O₃ was effective in reducing the counts of psychrotrophic bacteria and this reduction was maintained during the shelf-life, when fruit were washed for 3 and 5 min. Our results showed that washing with ozonated water may be an alternative to traditional sanitizers, but further studies are needed regarding O₃ concentration and washing times.