

Title:

Effect of ozone on *Listeria innocua* in bell peppers (*Capsicum annuum* L.) and in contaminated water

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Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

The development of innovative technologies, promoting fruits and vegetables safety to reduce the risk of related food-borne diseases, is an actual concern.

Ozone (O₃) is recognized as a strong oxidant and can be applied in food surface disinfection, sanitation of food plant equipment and reuse of wastewater. Several studies demonstrated that ozone reduces the microbial load of fresh fruits and vegetables, thus improving products' safety.

The objective was to study the effect of ozone on the microbial load of red bell peppers and on contaminated water. *Listeria innocua* was selected as target microorganism (apart from being non-pathogenic, it is physiologically very close to *L. monocytogenes*, and both can be isolated in the same products).

Experiments were carried out using an ozone generator interconnected to a container (30L) filled with tap water. Ozone was continuously incorporated in water and its content indirectly measured by potential difference.

Artificially contaminated bell peppers, with *Listeria* (initial load ~ 10⁷ CFU/mg), were washed in water (control) and in ozonated water (O₃ concentration ~ 0.25 p.p.m.), for different times till a maximum of 60 minutes.

Artificially contaminated water, with *Listeria* (initial load ~ 10⁷ CFU/mg), was treated with ozone (O₃ concentration ~ 0.25 p.p.m., continuously incorporated in the water), for different times till a maximum of 15 minutes.

Results showed that, in average, ozone-washings reduced 1.6 ± 0.4 log-cycles (± standard deviation) of *Listeria* in bell peppers, being this process equivalent to a simple water-washing. The time of treatment did not affect the results.

The effect of ozone on contaminated water was different. *Listeria* in water suffered an inactivation dependent on the time of treatment, similar to a thermal inactivation kinetic behaviour (initial lag phase ~ 5 minutes, followed by a maximum death rate of ~ 0.5 min⁻¹). After 15 minutes, *Listeria* load decreased 5 log-cycles.

Keywords: fruits and vegetables, safety, innovative technologies, ozone

Área: Processing, waste reduction and sustainability

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