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Assessment of the efficiency of ozonated water as bacterial contamination reduction tool in a pork cutting plant

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The food industry is constantly searching for new tools to reduce bacterial contamination in the plant. In this study we assessed the efficiency of ozonated water as a tool to improve reduction of bacterial contamination in a pork cutting plant. It was first evaluated as a way to eliminate *Listeria monocytogenes* that persists after cleaning and disinfecting operations. Sixteen contaminated sites after these operations were selected. They consisted in surfaces on the equipment and conveyors of the cutting rooms and non-contact surfaces. Each site was divided in two; one half receiving a 3.5 ppm ozonated water treatment (10 seconds application). Two to eight swabs were collected on each site. *Listeria monocytogenes* detection was conducted using MFHPB-30 Health Canada method. No statistical differences ($\chi^2 > 0.05$) were measured with 62.5 % (10/16) of sites and 37.7 % (26/69) of samples contaminated without treatment and 75 % (12/16) and 39.1 % (27/69) respectively after treatment. Ozonated water was also tested on conveyors to reduce residual *Salmonella*, coliforms and aerobic flora load. Three conveyors were selected in the cutting rooms. Ten samples of 300 cm^2 were collected before and after water or ozonated water rinse. Aerobic flora and coliforms counts were done using petrifilms (3M) and *Salmonella* was detected using the MFLP-75 Health Canada method. In all the samples, *Salmonella* couldn't be detected and coliforms were below detection limit. Aerobic flora results were compared after

water and ozonated water treatments. A statistical difference of 0.64 cfu / 300 cm^2 was measure on one of the conveyor (t-test $p > 0.05$). Results show that, in these conditions, the efficacy of a supplementary ozonated water treatment in the cutting room is low and has no industrial relevance. This could be caused by residual presence of organic matter on the surfaces, which reacts with ozone molecules.

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