

TITLE: *Listeria monocytogenes* BIOFILM REDUCTION BY THE ACTION OF SANITIZERS

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ABSTRACT:

Listeria monocytogenes is the etiological agent responsible for listeriosis, a disease of low incidence and a high mortality rate. This bacteria is capable of forming biofilms on surfaces, including food processing environments. Cells in biofilms are more resistant to environmental challenges, such as the action of sanitizers, than when they are in suspended planktonic form. Disinfectants based on chlorine and quaternary ammonium compounds are widely used in the food industry due to its broad spectrum bactericidal activities, high efficiency and low cost. The aim of this study was to evaluate the ability of sanitizers to reduce biofilms of *L. monocytogenes*. Chlorine at 5% concentration and 10% quaternary ammonia were tested. Both in due dilutions recommended by the supplier. Two strains of *L. monocytogenes* capable of biofilm formation belonging to the Laboratory of Milk and Meat Inspection of the Federal Rural University of Pernambuco and isolated from samples of hams were analyzed. Isolates were inoculated into tubes containing 3mL of Tryptic Soybean Broth until MacFarland 0.5 turbidity and incubated at 37°C for 24 hours. After this period, the contents of each well were aspirated if three washes were performed with sterile distilled water. The plate was dried at room temperature. 200µl of the sanitizer tested in each well was added and a first optical density (OD) reading of 620nm was performed immediately. The plate was incubated at 37°C for 24 hours and then the final OD reading was also performed at 620nm. The action of the sanitizers in the biofilm was defined by the equation: $100 - [(OD_{24h} \text{ mean} / OD_{0h} \text{ mean}) \times 100]$. Both sanitizers were able to reduce biofilms. Chlorine presented a greater decrease in the adhesion of biofilms, in relation to the quaternary ammonium. There was a reduction of 75.44% and 79.76% of the biofilms against chlorine and a decrease of 64.84% and 66.13% when tested with quaternary ammonia. In spite of obtaining a reduction, it is possible to identify a greater difficulty of the control of *L. monocytogenes* when presented in the form of biofilm. It represents a great risk to public health, mainly because it allows the presence of the bacteria in the environments for a longer period of time and thus increases the risk of food contamination. Thus, it is important to use adequate sanitizers in the hygiene of food handling areas to avoid the permanence of this microorganism and, thus, the occurrence of listeriosis outbreaks.

Keywords: chlorine, quaternary ammonia, public health

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