

TITLE: BIOFILM FORMATION OF *LISTERIA MONOCYTOGENES* IN POLYPROPYLENE COUPONS AND PERACETIC ACID, QUATERNARY AMMONIUM AND POLYHEXAMETHYLENE BIGUANIDE HYDROCHLORIDE RESISTANCE

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ABSTRACT:

The technological processes employed in industries, mainly in the areas of processing of meat cuts, have numerous areas that can be considered sources of contamination by pathogens. *Listeria monocytogenes* features that promote adhesion and biofilm formation, giving protection, adaptability and control measures resistance. The aim was assessing the ability of biofilm formation by *L. monocytogenes* in polypropylene surfaces and the susceptibility before usual concentrations of peracetic acid, quaternary ammonium and polyhexamethylene biguanide hydrochloride. Three isolates of *L. monocytogenes* from swine processing areas belonging to serotype IVb were used. The TSB-YE broth with polypropylene sterile coupons was adjusted in 0.5 MacFarland scale and incubated at 12 and 37°C for 120h. After, the coupons were washed in doubled with 10mL of Phosphate-Buffered Saline (PBS) for removing planktonic cells. The sessile cells were highlighted by friction with sterile swabs, immersed in tubes containing 10 ml of saline and homogenized in the vortex for 60 seconds. At the same time, polypropylene coupons were treated with the maximum and minimum recommended concentration of peracetic acid (0,1; 0,2%), quaternary ammonium (1,0; 2,0%) and polyhexamethylene biguanide hydrochloride (1,0; 2,0%) for 10 minutes. Later, in both situations were performed decimal dilutions, sown in TSA-YE, enumeration after 37°C/48h and the results were expressed in CFU/cm². All trials were conducted in three repetitions in time. The results showed that *L. monocytogenes* was able to form biofilms in polypropylene in two temperatures tested, with count 4.46 and 3.95 Log CFU/cm² in 12 and 37°C, respectively. All sanitizers were able to reduce the initial count of the biofilm. However, none of the concentration tested was able to totally eliminate the population, even in the recommended concentrations, showing counts <1 Log CFU/cm². Thus, is evidenced that *L. monocytogenes* is able to form biofilms in industrial conditions, highlighting the psychrotrophic nature of the pathogen. The adaptability of the surviving cells to stressful conditions hinders your elimination by industries programs and offers risks to public health.

Keywords: Biofilms, harmlessness, sanitizers