TÍTULO: THE ABILITY OF RHAMNOLIPID BIOSURFACTANT TO DISRUPT *SALMONELLA* ENTERITIDIS BIOFILM AT DIFFERENT CONDITIONS

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Resumo:

Salmonella enteritidis is one of the most common pathogens in foodborn illnesses. It is capable of binding to inert surfaces in food processing environment, and consequently, form biofilms. This ability contributes to their resilience and persistence can promote a chain of infection by cross contamination. Biofilm is a growth and survival structure that protects the bacteria against stress conditions, such as cleaning and drying procedures. Once formed, becomes a chronic source of contamination in food representing a huge concern for industry. Thus, study the processes of bacterial adhesion to surfaces in contact with food is the first step in developing effective strategies to decrease its occurrence. Rhamnolipids (RL) are a class of biosurfactants produced by *P. aeruginosa* that have been shown anti-adhesive and dispersant activity so, it is a good candidate to control the formation and removal of biofilms. In this sense, the objective of this study was to analyze the susceptibility of *Salmonella* Enteritidis ATCC 13076 biofilms to rhamnolipid. Assays were performed varying the concentrations of RL, the temperature and the culture medium. Biofilm was quantified using crystal violet staining.The biofilm growth kinetics was evaluated using the commercial media (TSYEB and CN) and a food matrix (milk powder). These results showed that after 24h at 37℃ nutrient broth and milk were the best substrates for biofilm establishment and they were chosen for RL removal experiments. The most effective treatments for *S. enteritidis* occurred at a concentration of 0.25% of RL at 25° C which disrupt 60.3% of the biofilm formed on CN whereas in milk 64.3% of biofilm was removed using 0.50% of RL at 4℃. Thus, the rhamnolipid showed potential as biofilm dispersing agent, though the temperature and concentration parameters,and the nature of the culture medium affected the observed activity.

Palavras-chave: Biofilm, Rhamnolipids, *Salmonella* Enteritidis