
Biofilm Formation of *Staphylococcus aureus* Isolates From Food-Contact Surfaces of Food Processing Environments of Hospitals

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Resumo

The surfaces that come into contact with foods are important sources for the transmission of microorganisms in food processing environment. Many pathogenic bacteria are able to form biofilm in food-contact surfaces remaining viable even after cleaning procedures. The capability of *S. aureus* to form biofilms enhances its survival in food processing environments providing a physiological advantage as etiological agent of foodborne diseases. This study assessed the ability to form biofilm of *S. aureus* (n=57) isolates from food-contact surfaces of food processing environments of hospitals in the city of João Pessoa, Paraíba, Brazil. The biofilm formation was evaluated in tryptone soy broth after 48 h of incubation in polystyrene microtiter plates using crystal violet staining and its quantification was based on the difference between the optical density (OD) measurements of the test and negative control samples ($\Delta OD_{492\text{ nm}}$). The isolates were classified as strong ($4 \times OD_{\text{control}} < OD$), moderate ($2 \times OD_{\text{control}} < OD \leq 4 \times OD_{\text{control}}$), weak ($OD_{\text{control}} < OD \leq 2 \times OD_{\text{control}}$) or none ($OD \leq OD_{\text{control}}$) biofilm-producing. The strains *S. epidermidis* ATCC 12228 and *S. aureus* ATCC 25923 were used as negative and positive (strong producer) control for biofilm formation, respectively. Among the *S. aureus* biofilm-producers $\Delta OD_{492\text{ nm}}$ values ranged from 0.217 to 0.881. Two

Referência:

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isolates (3.5%) was classified as non-biofilm producers ($\Delta OD_{492\text{ nm}}$ 0.039 and 0.041) and two (3.5%) were weak biofilm-producers ($\Delta OD_{492\text{ nm}}$ 0.08 and 0.09). However, the most isolates (n=53; 93%) had ability to form biofilm, classified as moderate (n=16; 28%) or strong (n=37; 65%) producers. The high percentage of biofilm-producers among *S. aureus* isolates studied alert to the risk that this pathogen is as chronic source of contamination, especially in food processing environments to hospitals.

Palavras-Chave: Biofilm, *Staphylococcus aureus*, Food-contact surfaces

Agência de Fomento: