

TITLE: BIOFILM-FORMING CAPACITY OF BACTERIA ISOLATED FROM DAIRY EQUIPMENT

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Surfaces in food industries that are not properly cleansed and sanitized may have a complex microbial community and biofilm forming. Bacterial biofilms are aggregates of microorganisms in which cells are embedded in a self-produced matrix of extracellular polymeric substances (EPS) that are composed of polysaccharides, proteins, nucleic acids, lipids and other biopolymers. Cells present in biofilm are more resistant and difficult to remove during the hygiene process and represent a potential source of food contamination. A biofilm community may comprise a single and/or multiple species of bacteria, forming a single layer or three-dimensional arrangements. This study aimed to evaluate the ability of biofilm formation of isolates obtained on equipment surfaces of a dairy farm. A total of 11 isolates were analyzed for their ability to adhere and form biofilm in polystyrene. The experiment was performed in 96-wells microtiter plates using the isolates separately and a mixed culture with all isolates. Microorganisms were inoculated in TSB broth and biofilms were formed during 48 h of incubation at 30 °C. Afterwards, plate contents were read at 600 nm for the quantification of growth, then discarded and the sessile cells in the wells were washed three times with PBS, stained with 0.1 % crystal violet (w/v) for 30 min and optical density determined at 590 nm.. Among the isolates analyzed, six (54.5%) were considered non-biofilm producers, while one (9%) was weak, three (27.5%) were moderate and one (9%) was strong biofilm producer. The culture mix was classified as weak biofilm producer, which may be related to the competition for nutrients and/or the production of toxic metabolites by certain isolates. These results demonstrate that bacteria present in the milk processing environment are capable of forming biofilm, which can be a source of contamination and further spoilage of milk products.

Keywords: biofilm, multispecies biofilm, isolates, polystyrene.

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