On the Relevance of Microbial Biofilms for Persistence of *Staphylococcus Aureus* in Dairy Farms

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**Editorial**

Biofilms are defined as bacterial communities surrounded by a structured extracellular polymeric matrix which is adhered to biotic or abiotic surfaces [1]. Biofilm formation develops in two steps: firstly, a primary attachment occurs onto polymeric surfaces, mediated partly by cell-wall associated adhesins; secondly, cell-cell proliferation forms a multilayered biofilm, mediated by production of extracellular factors [2]. In the food industry, bacterial biofilms are considered a main problem especially in dairy, fresh products, poultry and meat processing plants. Outbreaks of foodborne disease caused by various species of Listeria, Salmonella, and Staphylococcus have been linked to the milking environment.

These findings have shown greater ability than non-biofilm-producing strains to adhere to the mucosa of the mammary gland. Moreover, *S. aureus* strains with phenotypically active genes encoding biofilm components may have the ability to start biofilm production, causing persistent intramammary infections [6].

The mechanism for formation of *S. aureus* biofilms on surfaces is a complex process, resulting from physical-chemical interactions between different components, including material surface properties, surface properties of bacteria and environmental factors. Therefore there is a need for further studies for an effective control of undesirable biofilms in the environment of dairy farms. The main issues should include the initial investigation of the prevalence and identification of *S. aureus* strains with the ability to produce biofilms on materials commonly used in the dairy industry, the evaluation of different concentrations of new and commonly used sanitizers in milk handling and processing lines, and how the natural mixed microbiota influences pathogen reduction during disinfection [7]. Importantly, these studies should be carried out on a regional basis using local dairy herds, since *S. aureus* strains found in the milking environments show considerable variability in relation to various parameters of growth and metabolic activity.

**References**


