

Biofilms: Significance in Food Processing and Control Strategies

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Food industry is an appropriate environment for the growth of microorganisms owing to the presence of water and nutrient rich raw materials in the food processing plants. These provide microbes an ideal environment to thrive and colonize on an equipment, another food contact surface or on food material, eventually resulting in the formation of biofilms. Biofilms can be defined as complex microbial ecosystems formed within an extracellular polysaccharide matrix by one or more species of microorganisms. Biofilms are known to contribute to severe losses in the food industry as they can be detrimental to processing equipment and other food contact surfaces and could result in contamination of food being processed. This can lead to serious consequences of foodborne illness outbreaks as well as recalls. Control of biofilms has consistently been a challenge for many decades as these are formed by the microbes based on the environment around them. Biofilms provide physical resistance (against desiccation of microbial cells), mechanical resistance (against liquid flow in pipelines) and chemical protection (against antimicrobials, disinfectants, etc.) to microbes residing within them, thus neutralizing the effect of different treatments. The most recommended way of controlling biofilms in a processing plant is through thorough cleaning and washing of equipment. However, over time it has been realized that this method is not sufficient requiring additional and improvised methods, which in combination with washing could help in better removal of biofilms from food contact surfaces in a quicker and efficient manner, eventually helping in its prevention over time. This presentation will cover biofilm formation on food contact surfaces in food processing plants, the existing and novel strategies to control biofilms, along with an insight on the research work focusing on one of the novel strategies for biofilm prevention.